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Credits: All pictures are Official U.S. Navy Photographs unless otherwise indicated.

Front cover photo by HM1 M.R. Villaroman, Jr., USN, records the first observance on 13 Oct of the official Navy Birthday at Naval Hospital Camp Pendleton, Calif., in 1972. Assisting the CO, CAPT E.D. Loweecey, MC, USN (far right) in the cake-cutting ceremony are (from left to right): HM3 Garon, in a Navy uniform of Civil War vintage; HM3 Westmoreland, wearing a Navy Seaman uniform circa 1830; HM3 Fuller, dressed as a Navy Seaman in 1812; HM2 Albright in 1972 Hospital Corpsman uniform; HM2 Smith, dressed for a Navy Boarding Party of 1815; HM1 Parker, modeling a 1775 Boatswain's uniform; and HMCS Wood, dressed in a 1797 Navy Surgeon's uniform. This tableau should inspire all-out commemoration of the Navy's 198th birthday on 13 Oct 1973.

The page 2 photo was taken during a visit of the Navy Surgeon General, VADM Donald L. Custis, MC, USN to the Orthopedic Service of Nav Hosp San Diego, Calif.

The continued support of the Illustrations and Exhibits, and the Photography Divisions of the Media Dept., Naval Medical Training Institute, NNMC, Bethesda, Md., is gratefully acknowledged.



from the Chief

October 1973 marks the 198th birthday of our great Navy — a Navy which has grown from the original two ships authorized by Continental Congress in October 1775 into the huge technologically oriented, multi-faceted, worldwide organization we know today. From the time Navy surgeons went aboard the first vessels authorized by the Continental Congress, Navy Medicine and Dentistry likewise has grown. We too, have grown into a technologically oriented system, becoming more mechanized in the diagnosis of diseases and specialized in the delivery of treatment.

However, one very critical element of health care in which we have not made commensurate progress during these 198 years is in the area of communicating with our patients, verbally or otherwise. This is understandable when we realize that, generally, since becoming civilized, man has had and is having difficulty in achieving effective person-to-person communication. The reasons for these difficulties are many, but they are compounded for us in the health professions when the need for understanding between people becomes even more vitally personal, extremely sensitive, and absolutely essential. In addition to the normal forces mitigating against "understanding," we in the health profession must constantly consider in our communications with our patients and their families, the overpowering forces of fear, anxiety, and depression which stem from illness and the possible threat to life. These forces alone make understanding

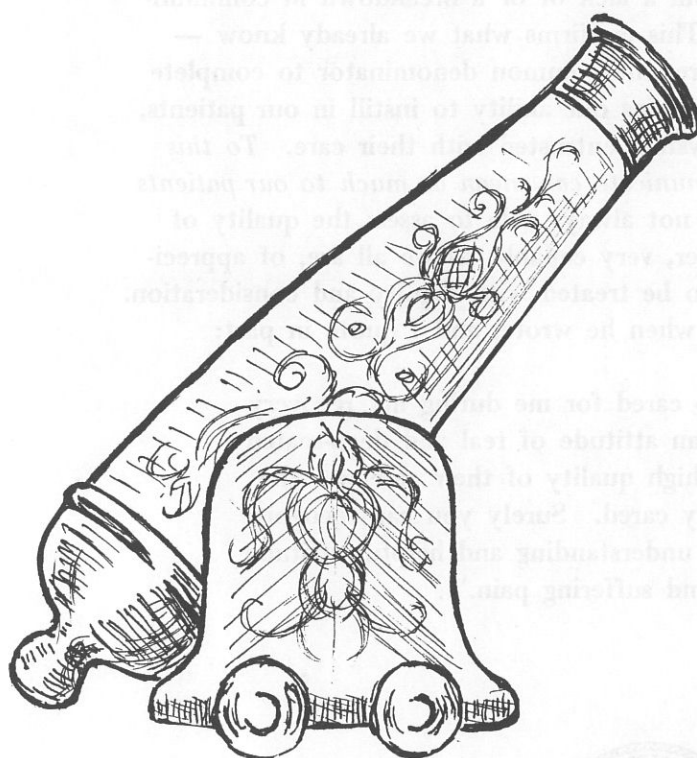
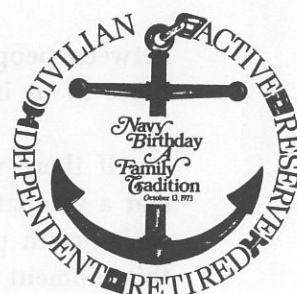
between people a difficult task; the difficulty is compounded, particularly if those of us in the health professions fail to consider these forces.

If there was ever a time when people needed to be greeted with tolerance and a sympathetic attitude, it's when they are standing on our doorstep with their health problems. The greatest need of our *patients* and their families at this moment is "understanding" and sense of "partnership" in their future well-being. The main ingredient in developing this communicative environment with our patients is to have empathy for them. Without empathy, we tend to assume people have the same knowledge and familiarity with their medical problems as we do. The assumption is not valid, since people differ widely from each other in every respect but one: we are all guided less by reason than by emotion, especially when we are ill.

Of letters sent to me which take issue with the health care we provide, the most present problems stem from a lack of or a breakdown in communication rather than the care itself. This confirms what we already know — that in spite of our high quality care, the common denominator to complete success in delivery of health care remains our ability to instill in our patients, confidence in the people and the system entrusted with their care. *To this end, the manner in which we communicate can mean as much to our patients as the care itself.* For patients are not always able to assess the quality of professional care. They are, however, very capable, as we all are, of appreciating courtesy and what it means to be treated with dignity and consideration. A satisfied patient sums it up best when he wrote, and I quote in part:

"The men and women who cared for me during my recovery each continually exhibited an attitude of real and deep-seated attention. Magnifying the high quality of their care was the obvious fact that they really cared. Surely you can recognize the value of this unusually understanding and helpful attitude to a patient who is weak and suffering pain."





“NAVY BIRTHDAY—A FAMILY TRADITION”

October 13, 1973



DEPARTMENT OF THE NAVY
OFFICE OF THE CHIEF OF NAVAL OPERATIONS
WASHINGTON, D.C. 20350

IN REPLY REFER TO

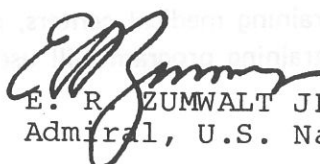
Navy Birthday 1973

In 1775, when the Continental Congress moved for the first time to appropriate funds for the outfitting of ships, the foundation was established for what was to become the United States Navy. From that beginning, 198 years ago, our Navy has sailed ever vigilant as a protector of our shores and defender of freedom of the seas.

Throughout our history the deeds of Navy men and women have inspired succeeding generations and created proud traditions. An essential element of those traditions has been the role of the entire Navy community--the Navy family--in support of the Navy's mission. Indeed, the combined achievements of the Navy family--active duty personnel, dependents, Navy civilians, reservists and retirees--have shaped the enduring character of the Naval Service. That character has consistently reflected strength and commitment in the traditional manner of a close-knit family.

The basic responsibility to meet the Navy's worldwide commitments is, of course, fulfilled by Navy men and women on active duty. Navy dependents, in their daily sacrifices, embody the sense of purpose and dedication that sustains our active duty personnel. Naval reservists also share fully in the Navy mission, strong in their readiness and always prepared to assume greater responsibilities should the need arise. Retirees, too, have a special role in the Navy family, for having served with honor they now offer sound support and counsel based on their varied experience. And, of course, the contributions and close association of Navy civilians also play a vital role in helping the Navy achieve its goals.

Like any family, the Navy family derives its strength from all its members working in harmony for a common purpose. The 1973 Navy Birthday is a celebration of that unity, and an opportunity for every member of the Navy family to reflect on the contributions of the other members, and the mission we all share of helping to make the Navy of the future as dynamic as the Navy of the past.


E. R. ZUMWALT JR.
Admiral, U.S. Navy

UNIVERSITY OF HEALTH SCIENCES

Members of the Board of Regents are generally in favor of the development of a Uniformed Services "University" of Health Sciences to include the multidisciplines of medicine, dentistry, nursing, allied health, health care administration, and veterinary medicine.

Appointment of two committees was proposed by the Board: (1) Site-Selection Committee to visit approximately eight sites under consideration in the D.C.-metropolitan area; (2) Search Committee to select a President/Dean for the University.

During a more recent Board of Regents meeting, the Director of the Division of Accreditation of the AAMC outlined the experiences of some 28 medical schools developed and established over the past 12 years. . . suggested that the earliest possible entry time for medical students to Uniformed Services "University" would be late 1976 or 1977, vice 1974.

PROJECTED STAFFING OF GMOs

Relatively stable assignment of GMOs to the Operational Forces anticipated through 1975. . . Concern is for GMO availability for hospitals and dispensaries in FY-1975.

BASIC HOSPITAL CORPS SCHOOLS

Significant increase in the number of ineligible personnel reporting to the Basic Schools. . impacts on overall staffing, high attrition, and personnel resource available for technician training. . . Discrepancy between GCT and ARI test scores by the recruit-training centers now said to be resolved.

REORGANIZATION OF NRMCS AND HOSPITALS

Recommendations for reorganization of the naval regional medical centers, and guidelines for the standardization of medical-center organizations are under consideration. . . Effective date planned for reorganization and consolidation of medical centers and hospitals is 1 Jan 1974.

Look for revision of BUMEDINST 5450.4B, a standard-organization guide for medical centers and hospitals, early in 1974.

Staffing titles favored include: Commanding Officer, Naval Regional Medical Center (vice Director/CO, NRMC); Director of Professional Services (Deputy Commanding Officer at Pensacola and five, primary, graduate-training medical centers), who succeeds in command in absence of CO; Director of Administrative Services; Chief of Surgical Service, Chief of Military Personnel Service, etc., to designate heads of professional and administrative services. . in the major graduate-training medical centers, chiefs of services who conduct an approved residency-training program will use the title "Chairman" when communicating

with members of the academic community; Operating Management Services (vice Operating Services Division); Special Services (vice Special Services Division); Food Management Service (vice Food Service Division); Regional Health Coordinator, where appropriate, will be a Special Assistant to the CO to coordinate health services provided by the various medical-treatment facilities assigned to the naval medical region.

ROYAL THAI NAVY SURGEON GENERAL

VADM Komet Krutrachue to attend The Association of Military Surgeons Annual Meeting on 25-28 Nov 1973 in Washington, D.C. Arrangements underway at BUMED to assist the Royal Thai SG in visiting some Naval medical facilities during his visit through 7 Dec.

AVIATION-APTITUDE SCREENING FOR KUWAIT CANDIDATES

The Navy has been requested to send a team to provide "Aviation-Aptitude Screening" for approximately 100 Kuwait Air Force candidates and 200 enlisted technicians, expected to receive training in the U.S.

SUPPORT FOR THE NAVY RECRUITING COMMAND

Pilot project is proposed for trial in the SIXTH Recruiting District wherein flight-physical exams would be done in the AFEs, with a supplemental civilian eye exam.

If successful, with acceptable rise of NPQ-rate at Pensacola, use of the procedure might be extended to other areas.

VD STUDY AT SUBIC BAY

A good VD Program is expected to evolve following preliminary fact-finding study by Navy personnel, combined with a research study conducted by Public Health Service personnel in May-June 1973.

BUMED/ONR DENTAL RESEARCH WORKSHOP

Technical workshop on dental research, 16-18 Jul 1973, was attended by representatives of the Office of the Director of Defense Research (DOD); Office of Naval Research; Dental Research Programs of the Army, Air Force, VA, and the National Institutes of Health; National Research Council-Committee on Naval Medical Research; ADA; civilian universities; and Navy medical and dental officers. . . . "Problem areas" involving the present dental health-care system of the Navy were explored in depth.

Final report will be distributed to all participants and appropriate BUMED personnel. 🍀

BUMED STREET

Regional Educational Programs for Relicensure

By LCDR Shirlee C. Hicks, NC, USN,
Educational Coordinator,
Naval Hospital Portsmouth, Virginia 23708.

The frequent interchangeable misuse of the terms "inservice education" and "continuing education" recalls to mind Voltaire's entreaty: "If you wish to converse with me, define your terms."¹ While inservice education is properly regarded as a part of continuing education, the two terms are not synonymous.

The Joint Commission of Accreditation of Hospitals, Standard V (JCAH) defines inservice education as an inhouse compulsory program designed to keep the nursing staff up-to-date on new and expanding nursing-care programs, and new techniques, equipment, facilities, and concepts of patient care. The JCAH further defines continuing education as a voluntary program which makes use of educational opportunities outside the hospital.²

PROGRAM PLANNING

Having first defined terms, priorities should then be determined. There should be a rational plan for satisfying training-program requirements, based upon the expressed needs of the consumer. The futility of designing programs, without considering all practicing professionals of all health-care facilities and nursing specialties is inevitably demonstrated.

The above paper was presented by the author at the Continuing Education Workshop conducted 12-16 March 1973 at the Naval Medical Research Institute, National Naval Medical Center, Bethesda, Maryland.

It may be helpful to formulate workable guidelines in developing a sound, regional, educational program. Appropriate consideration should be given to the following conditions:

1) *Relevance.* In the interests of improving nursing service, address the health needs of the patient and the educational needs of the practicing professionals.

2) *Consistency.* Bear in mind the overall objectives and mission of the health-care facility. Avoid working at cross-purposes.

3) *Interdisciplinary approach.* Utilize and involve the consumers; active participation will increase their knowledge of health practices, understanding, and acceptance of the changing role of the nursing profession.

4) *Qualified mentors.* Those who present assigned topics and programs should be qualified personnel or resource individuals. Whenever possible, members of the nursing profession should be utilized to address the role of nurses.

5) *Variety.* Vary the teaching methods and formats used to achieve teaching-learning objectives. Make use of workshops, institutes, conferences, and systematic, independent study.

6) *Objectives.* Each program should have prescribed objectives that serve as a basis for determining content, learning experiences, and evaluation.

7) *Evaluation.* Sponsoring agencies and health-care consumers should collaborate in evaluating content, scheduling, and overlapping of dates.

8) *Records.* Continuing-education records should be maintained in a systematic manner.^{3,4} Attendance records are expected to assume increasing importance in the future, and great emphasis will be placed on this challenging requirement.

LICENSING

The American Nurses Association (ANA) has clearly taken the position that: "Education for nursing must be a continuing process."⁵ In the report of the National Commission for the Study of Nursing and Nursing Education, a continuing education system is strongly advocated. It is proposed that: "All licensure laws be revised to require periodic review of the individual's qualifications for practice as a condition for license renewal."⁶

The CEU.

There is considerable current confusion and fragmentation since many states are in the process of passing legislation governing standards for mandatory continuing education and relicensure. Patterning their renewal policies after the 1972 ANA Interim Statement,⁷ some states are utilizing the continuing-education unit (CEU)

as a means of standardizing credits awarded for non-credit courses such as classes, lectures, workshops, symposiums, institutes, short courses, and organized forms of independent study. The ANA defines the CEU as "ten contact hours of participation in an organized continuing-education experience under responsible sponsorship, capable direction, and qualified instruction."⁸

The National Task Force Standards.

Administrative policies and responsibilities for implementation and utilization of the CEU were set forth by the "National Task Force," as follows:

1) "A specific high-level individual within the continuing-education operation of the institution should certify and approve the awarding of CEUs for a program prior to the program offering."⁹

2) "The program director for each learning experience should be responsible for certifying that the program was attended and completed by each of the individual participants."¹⁰

3) "The institution is responsible for establishing and maintaining permanent records of continuing-education units awarded. It is strongly recommended by the Task Force that the information recorded for each individual include the following:

- a) The name of the participant
- b) Social Security number
- c) Title of course
- d) Course description and comparative level
- e) Starting and ending dates
- f) Format of program
- g) Number of continuing education units awarded
- h) Sponsoring institution or agency, and location of course."¹¹

The Florida Proposal.

The Florida State Nurses Association has proposed implementation of a mandatory program for relicensure through the utilization of: 1) The CEU for measurement, recording, reporting, accumulation and recognition of participation by Florida Nursing Association members, and; 2) The Task Force's Standards, in order for a member or health-care facility to receive prior approval of a program.¹²

DISCUSSION

No matter how large or small a health-care facility may be, creative and realistic programs must be established; corresponding records must be compiled and maintained.

While the responsibility for relicensure must rest

NAVAL HOSPITAL
PORTSMOUTH, VIRGINIA

NAME:	DATE:
EVALUATION OF INSERVICE/CONTINUED EDUCATION PROGRAM:	
COMMENTS:	

Figure 1.—Attendance Card.

upon each individual nurse practitioner, each nursing-education department will still be responsible for providing the programs, and maintaining records for each program offered. Record-keeping forms must be tailored to meet the needs of individual health-care facilities, and each nursing-education department will therefore assume the task of devising and keeping such records. The forms being utilized at Naval Hospital Portsmouth, Va., are reproduced in Figures 1, 2, 3, and 4.

- 1) Encourage all licensed nursing practitioners to take an active part in the American Nurses Association at all levels.

- ## RECOMMENDATIONS

little difficulty the military organization could readily anticipate and meet professional standards required for demonstrated proficiency.

Some pertinent proposals immediately come to mind, in the spirit of facilitating relicensure procedures and assisting our professionals, both individually and collectively in retaining their deserved reputation for a high level of competence.

- 1) Establish a universal Navy Bank for the collection of nursing-in-service and continuing-education data.
- 2) Form a tri-service continuing-education council.

- 3) Require all licensed nursing-service personnel to obtain a license in the state where they are practicing, except for those who are practicing nursing outside the U.S.

or:

- 4) Seek to establish a DOD credit program that will be accepted by all states, and meet the requirements of relicensure laws passed by all the states.

The military health-care professionals have the incentive, organization, and progressive spirit so vital for continued growth and improvement. It is time to demonstrate, once again, that we are prepared to lead in a constructive direction.

U.S. Navy Medicine

NAVAL HOSPITAL
PORTSMOUTH, VIRGINIA

NAME/PARTICIPANT

DATE

NURSING EDUCATION PROGRAMS
CERTIFICATE OF ATTENDANCE

S.S.N.

INSERVICE EDUCATION MEETINGS

TOTAL ATTENDED/NUMBER OF HOURS

CONTINUED EDUCATION MEETINGS

TOTAL ATTENDED/NUMBER OF HOURS

CONFERENCES

DATES/NUMBER OF HOURS

WORKSHOPS

DATES/NUMBER OF HOURS

SYMPOSIUMS

DATES/NUMBER OF HOURS

OTHERS

CHIEF, NURSING SERVICE

Figure 4.—Attendance Certificate.

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NAVAL RESERVE

RATING EXAMINATIONS

By CAPT Khlar E. McDonald, MC, USNR-R,
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Naval Reserve Center,
Jamestown, N.Y.

Promotion that follows successful participation in the "BUPERS Examination" is a reliable indication of the effectiveness of any given rate-training program today. Tests are the best of all measuring devices for comparing the specific knowledge or ability gained by all who take the examinations. A satisfactory grade determines who will, and who will not be promoted in the enlisted ranks of the active Naval Reserve Program.

Chances of competing successfully are greater if an individual can identify his opposition. Frequently the opposition is not human but rather a state of ignorance, inexperience, fear, or some other intangible. Perceiving one's deficiencies is the first step toward success. Develop a positive attitude.

PREPARATION FOR EXAMS

Study Habits.

Thorough preparation is the best method of overcoming personal deficiencies. Thorough preparation requires the application of an effective pattern of study. The

While the above article refers specifically to those who face the Hospital Corpsman Navy Advancement examinations, all of us in the Navy Medical Department must accept the professional adage that we are required to be eternal students. Examinations and reexaminations are becoming, increasingly, a permanent way of life. It matters little at what level we start; where we are going is the relevant point of reference.

For all who require better examination conditioning and more efficient study habits (Who among us does not?), this brief enjoiner may prove useful.—Ed.

following suggestions should help to develop an effective pattern of study:

1) Study in an environment free from all distractions. Periodic breaks in a study session are a good thing, but they should be enjoyed away from your study area. Let them be "breaks," not repeated distractions.

2) Accumulate your own study library in the HM rate. There are numerous sources of written material and texts from which the examination questions are taken. You will find a list of the more common reference sources as an addendum to this paper. Critically scan the material. Outline the basic areas while perusing them. Discuss areas that confuse you with other people in the rate. Their experience and knowledge will reinforce your efforts.

3) Always concentrate on whatever you are reading. Concentration is a habit, and can be as readily acquired as any other habit. Reading aloud is a good device for those whose minds begin to wander while studying. Making intelligible summary notes, or recording these thoughts on a tape recorder for replay will often aid in both concentration and retention.

4) Proceed from a general survey of the material to a detailed analysis. All references are organized in some manner (usually by topic). Become familiar with the general topics, and then work on the finer points under each topic. You will find the examination topics completely listed on the BUPERS examination tear-off sheet attached to each Naval Reserve examination.

5) For maximum comprehension and recall, reviewing should be done at different times while you are studying. Pause frequently to summarize what you have just read, go over the material at the end of the week or at the end of a unit, and before an examination go over all the material to be covered, with special emphasis on the most important parts and the areas in which you are weak. When you review, do it systematically; learn the basic organization of the material, and the ways in which parts fit into the whole. Comprehension of the general principles of the rate will make the remainder of your review easier. Once you have constructed a frame into which you can put your facts, you will find that they tend to slip in readily where they belong. Each fact then becomes related to the whole, and does not get lost as an isolated, unconnected bit of information. In taking exams you will be required to recall some isolated items of information, but because they will be formed from the overall picture, you will be better able to match them from an organized mental file.

Preparation to take a BUPERS HM-rate exam should span a period of at least four to six months, even if you are employed in an allied civilian occupation. Knowledge can only be obtained by degrees, and must constantly be renewed.

Navy Examination Center.

The command which administers the Navy Advancement Exam can greatly assist the candidates in several elementary ways:

- 1) Insist that the candidate is eligible in all respects to take the examination. This will force the individual to undertake at least a minimum of preparation.
- 2) Establish a date for the administration of examinations, well in advance of the period set forth by the Navy Examination Center. Reserve examinations in recent years have been given in the months of January and July.
- 3) Administer the examination on a free date when the only activity in the Reserve Center is the Navy Advancement Exam. A specific Saturday or Sunday when the examinees are free is an excellent time. (The Navy Exams have been administered in my particular Reserve Center on the second Sunday in January, and the second Sunday in July, at 1300 for the past eight years.) A good night's sleep, and the lack of other distractions is especially helpful to the examinee. Better control and administration of the examination is achieved when it is the only mission of the examining board during that frame of time.
- 4) Provide adequate space with good lighting, and other appropriate facilities.

THE EXAMINATION

Format.

Individuals taking these exams should know what is expected of them in the examination. The Navy Advancement Examinations consist of 150 multiple-choice questions. A passing grade is 2.5, which means that on a straight scale you must answer 94 of the 150 questions correctly. The examination for E-4 and E-5 grades covers only the professional areas, since the E-4 and E-5 Military Leadership examination must be successfully completed as a prerequisite to the advancement examination. The exams for E-6 and E-7 still contain questions in the professional and military areas. The average examination at this level contains approximately 120 questions in the professional area, and 30 questions in the military area. Many of the military questions are concerned with leadership and instructor training.

The time allotted for completion of the examination is three hours. Each question contains four multiple-choice answers of which only one answer is the *most* correct. There are no questions requiring inductive or deductive reasoning. The answers are factual. You will have to read, think, decide, and mark the letter corresponding to the best and most sensible choice in each case. The answer sheet is corrected by an optical-scanning process, so you must not make any stray marks on the answer sheet or fill in more than one answer.

Helpful Tips.

Here are some of the clues to look for in your attempt to answer each question correctly:

- 1) Be careful of distracters. They are expressions that are often almost correct, but not completely so.
- 2) Some questions are put in the negative and must therefore be answered in the negative, i.e., "All the following are true statements *except*. . ."
- 3) Read all of the answers before selecting that which appears to be the correct one. Often the first three answers are correct, and the fourth answer is. . . "All of the above." Avoid this trap!
- 4) Examine the grammatical form. When correctly answered the question statement is perfect grammatically. If the question ends with "a," the answer or phrase constituting the correct answer must begin with a consonant. If it ends with "an," the correct-answer portion of the statement must begin with a vowel. The verb may indicate whether the desired answer is singular or plural. Words like all, always, constantly, never, or none may also help you to reach a correct decision.
- 5) When you are sure you know the answer but simply cannot recall it, try to think of it in relation to other parts of the course.

6) Proper analysis of the answers presented often narrows the correct possibilities to two choices. To date no one has been penalized for making an educated guess in these exams. Negative knowledge certainly is as useful as positive knowledge in the solution of any problem. Answer all questions.

7) Review the examination thoroughly, after completing only those questions for which you immediately know the correct answer during the first reading. Often information contained in the examination itself will serve to recall correct answers to questions previously asked.

CARDINAL RULES FOR THE BUPERS-TEST TAKER

1) The best way to prepare for the examination is to do your work conscientiously day by day. It is best to prepare well in advance for any test. Do your concentrated review during the two weeks just prior to the examination. Avoid last-minute cramming.

2) Prepare yourself factually. Detail is important.

3) Prepare yourself physically. Get a good night's sleep before the exam, and eat a light, easily digested meal.

4) Prepare yourself emotionally. Adopt a positive attitude, and avoid undue concern. Excessive worry depletes your mental energy and powers of concentration.

5) Time is an important element in your test, therefore use it effectively. Speed is important only so long as it is associated with accuracy.

6) Think before you record your answer. Eliminate the incorrect choices and concentrate on the remainder. Your first response is usually the correct one, when it is a calculated guess.

7) Do not be discouraged if the examination seems difficult. The questions will purposely be difficult so that the examination can discriminate effectively. You are not only competing for correct answers, but also with the others who are taking the same examination.

These principles are not difficult to put into practice. You must accept the goal, adopt a positive attitude, and enthusiastically apply your efforts with logical consistency.

After the examination has been completed, do not

rest with immediately breathing a sigh of relief. Tests are also a valuable tool in the learning process. Just prior to handing in your completed answer sheet, muster all of your powers of concentration and analyze the test questions. When you have left the testing center find a quiet place, sit down and write out or record all of the questions, subject material, or answers that you can remember in a coherent fashion. Later study these notations and research the answers in given areas of information. If you have not successfully completed the examination, these notes can be an excellent basis for preparation for the next examination. The subjects covered in the HM rate are limited, and when you receive your profile card with the examination results, you will immediately recognize the areas in which you must improve.

PERSONAL LIBRARY

Your personal library should include the following reference sources:

- 1) HM Qualification and Bibliography sheet.
- 2) FITS (Functional Instructional Training System) HM 3 & 2.
- 3) Hospital Corpsman 1 & C NavPers 10670-A.
- 4) Hospital Corpsman 3 & 2 NavPers 10669-A.
- 5) Handbook of the Hospital Corps (1959 ed.) NavMed P-5004.
- 6) Manual of the Medical Dept. NavMed P-117.
- 7) Manual for Navy Instructors NavPers 16103-C.
- 8) Hospitalman NavPers 10664-B.
- 9) Military Requirements for PO 3 & 2 NavPers 10056-B.
- 10) Military Requirements for PO 1 & C NavPers 10057-B.
- 11) Disaster Control (Ashore and Afloat) NavPers 10899-A.
- 12) Manual of Naval Preventive Medicine NavMed P-5010.

The single most valuable resource in this list is the Handbook of the Hospital Corps (1959 edition), NavMed P-5004. Most of these references can be obtained from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402. ☎

Scanning Electron Microscope Studies of the Chemotherapeutic Control of Preclinical Cariogenic Infection

By CAPT Seymour Hoffman, DC, USN;*
CAPT Herman D. Tow, DC, USN;** and
John S. Cole, III, Ph.D.***

Chemotherapy for the prevention of carious lesions was first instituted in the late 1940s with the development of topical and systemic fluoride technics. However, it was not until the early 1960s that more sophisticated biologic approaches, focused on the control of etiologic pathogens, were sought. About this time, mucopolysaccharide-producing streptococci became identified as the major etiologic cariogens in dental infection.^{1,2} This knowledge accelerated research toward additional chemotherapeutic control measures, and today investigators are concentrating on developing and testing chemical agents (i.e. antibiotics, enzymes, antiseptics, etc.) which may arrest plaque pathogens prior to the development of clinically detectable lesions.^{3,4,5,6} Along these lines, cooperative studies between the Naval Medical Research Institute and the Armed Forces Institute of Pathology are

exploring the effects of various chemotherapeutic agents on plaque pathogens, with the aid of the scanning electron microscope (SEM). The purpose of this report is to present a summary of the results being obtained in studies involving: solubility variations on enamel surfaces; plaque morphology; and the *in vitro* test findings on several chemotherapeutic agents.

SOLUBILITY VARIATIONS ON ENAMEL SURFACES

The characteristic appearance of enamel-surface topography in deciduous and young, permanent teeth has been described as a series of concentric, alternating ridges and grooves that encircle the coronal aspects of the teeth. Histology texts refer to these as imbrication lines and perikymata, respectively. The grooved perikymata represent the site of surface enamel immediately overlying the striae of Retzius; the imbrication lines are convex bands or ridges that represent the surface terminal extensions of these striae. Scanning electron microscopy examination of clinically sound enamel samples has demonstrated two distinct types of imbrication-band patterns: undulating and overlapping. When treated with a buffered acetate solution (pH 4.0), the overlapping imbrication bands were found to be more susceptible to demineralization than the undulating type, resulting in subsurface

The opinions or assertions contained herein are those of the authors and are not to be construed as official, or as reflecting the views of the Departments of Defense, Army, Navy, or the military services at large.

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demineralization at overlapped sites. (See Figures 1 and 2) Furthermore, in erupted teeth the overlapping forms seemed to be confined primarily to the cervical third of the enamel, while in unerupted and partially erupted teeth they were more widely distributed over the surface.

PLAQUE MORPHOLOGY

Probably the most important component of the oral flora in the etiology of cariogenic lesions is the group of microorganisms designated as "cariogenic" strepto-

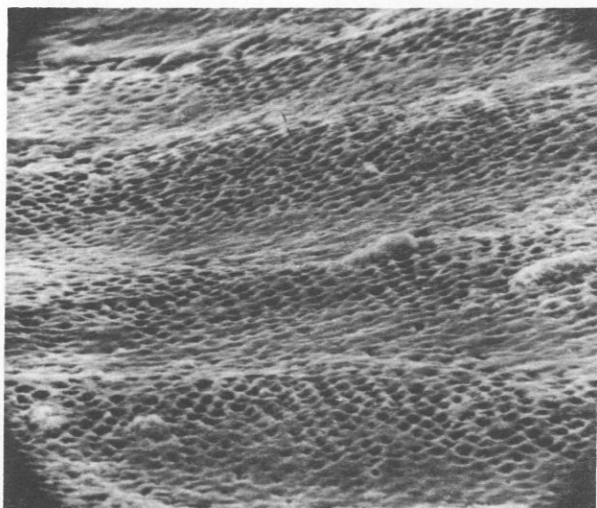


Figure 1.—Effects of acid on undulating topography in occlusal two-thirds of sample surface. Honeycombed alterations are located primarily on crests and slopes of imbrication bands. Perikymata are much less affected. (Original magnification: X240)

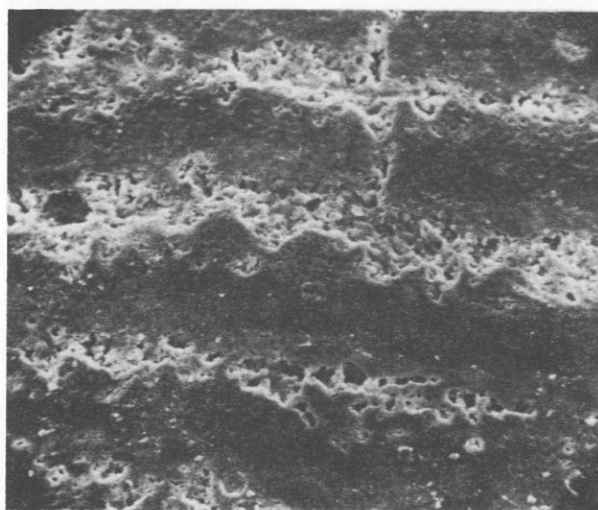


Figure 2.—Effects of acid on overlapping topography in cervical-third of sample. Alterations are seen primarily in perikymata, undermining the overlapping edges of the imbrication bands. (Original magnification: X240)

cocci.^{1,2,8,9} Other groups such as odontomycetes viscosus,¹⁰ lactobacilli,¹¹ etc., are also regarded as etiologic agents, but the "cariogenic" streptococci appear to be the most prolific and virulent of the initiating strains of etiologic agents.

One of the most characteristic features of these microorganisms is their ability to produce a highly tenacious, extracellular mucopolysaccharide, when grown in the presence of sucrose. It is generally considered that this product is the high-glucose polymer, dextran. Since these dextrans are extremely tenacious, many authorities feel that the mechanism of bacterial attachment to smooth, sound enamel surfaces may be mediated by this substance.¹²

Figure 3 shows the appearance of a single streptococcal chain obtained from a pure culture of "cariogenic" streptococci. The culture had been washed and diluted after incubation, was streaked across a coverglass, and was then examined with the scanning electron microscope (SEM). The typical streptococcal chain, composed of linked, oval-shaped cocci can thereby be clearly seen. There does not appear to be any type of secretory material or extracellular mucopolysaccharide associated with the organisms.

The following sequence of scanning electron micrographs most graphically illustrate the morphology and adhesive characteristics of cariogenic streptococci:

In Figure 4A, a pure sample of *S. mutans* (a powerful cariogenic agent in plaque), which had *not* been washed nor diluted as had those pictured in Figure 3, is illustrated. This concentrated mass of microorganisms was also spread across a coverglass for SEM examination.

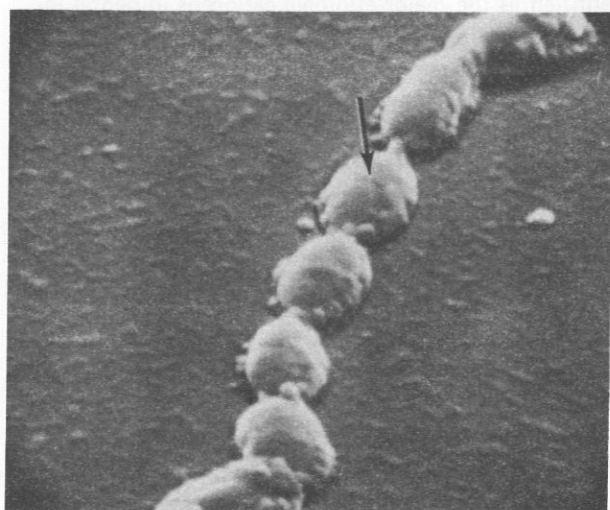


Figure 3.—Scanning electron micrograph of a "cariogenic" streptococcus, washed by centrifugation, and diluted. Arrow indicates equatorial constriction prior to cell division. (Original magnification: X20,000)

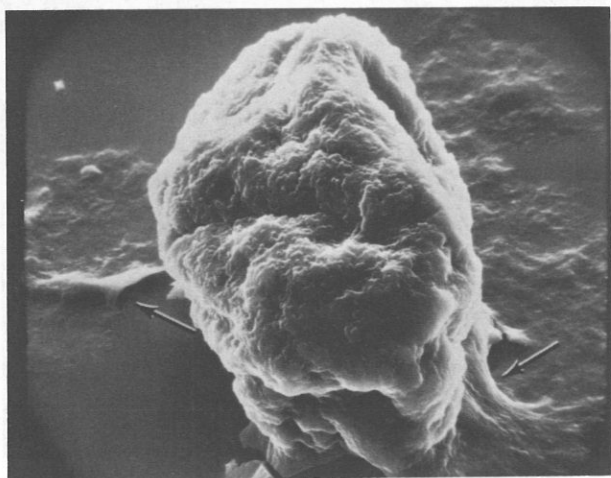


Figure 4A—Undiluted, unwashed sample of cariogenic streptococci. Note "sticky" mucoid features of the mucopolysaccharide matrix at base of "mountainous" mass (arrows). (Original magnification: X1200)

The highly tenacious mucoid characteristics of the mucopolysaccharide matrix are clearly illustrated about the base of this mountainous mass of streptococci (arrows). Note the partially submerged cocci visible within an enshrouding interbacterial matrix in Figure 4B. Most of these microorganisms are submerged within, and held in conglomerate masses by this matrix. These micrographs graphically illustrate the manner in which pure bacterial plaque may be tenaciously attached to enamel, and other smooth surfaces.

CHEMOTHERAPEUTIC RESULTS

Since the dextran mucopolysaccharide is considered by many to be the necessary agent which enables plaque organisms to adhere to smooth surfaces, it would seem that destruction of the dextran by the enzyme dextranase could theoretically result in the loss of attachment of pathogenic bacteria, and therefore reduce cavitation. Conflicting results in this area have been reported.^{13,14} In our studies, data have been collected, respectively, on two strains of dextran-producing streptococci, i.e., *S. mutans* (6715), and *S. sanguis* (10556).¹⁵ These data indicate that both strains are reduced by dextranase when grown *in vitro* on sterile enamel, but that *S. mutans* is more resistant to enzyme action and more destructive to the enamel surface than *S. sanguis*.

Figure 5 is a scanning electron micrograph of an enamel sample which had been implanted in media, monoinoculated with *S. mutans*, incubated, and examined by scanning electron microscopy without any further treatment. It represents an infected-control sample, showing *S. mutans* plaque that almost

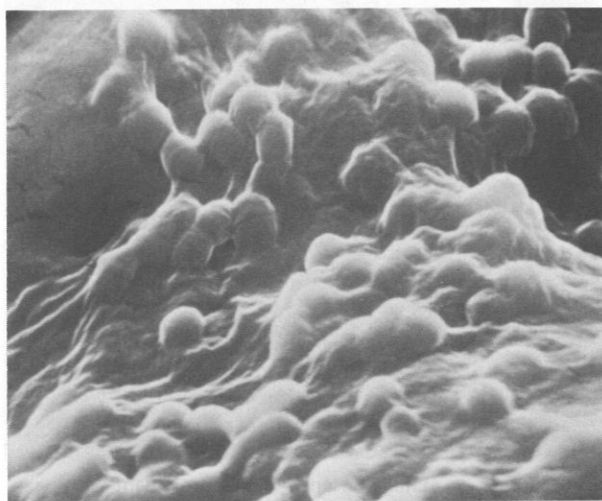


Figure 4B—Higher-power view of Figure 4A. Note submerged cocci within enshrouding interbacterial-mucopolysaccharide matrix. (Original magnification: X12,000)



Figure 5.—*S. mutans* plaque on enamel. (Original magnification: X25)

completely covers the enamel surface. Figure 6 shows another sample of *S. mutans* plaque which had been treated with dextranase after incubation. Only isolated clusters are present with large expanses of enamel free of the organisms. Figure 7 shows the effects of the enzyme on *S. sanguis* after incubation. There is no visible growth at this magnification. Apparently the enzyme removed significant quantities of these organisms in both cases, however its effects on *S. mutans* were not as complete as those on *S. sanguis*. The remaining *S. mutans* nidi could serve as seeds for the repropagation of mutans plaque. Thus, various other plaque organisms may also react differently to

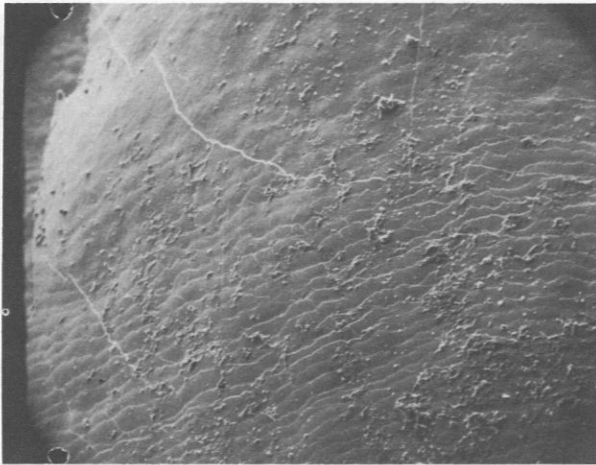


Figure 6.—*S. mutans* on enamel after treatment with dextranase. (Original magnification: X55)

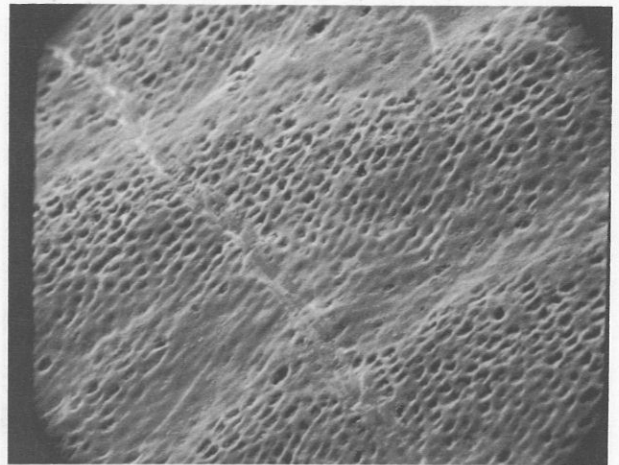


Figure 8.—*S. mutans*-induced honeycombed demineralization of nonfluoridated enamel. (Original magnification: X500)

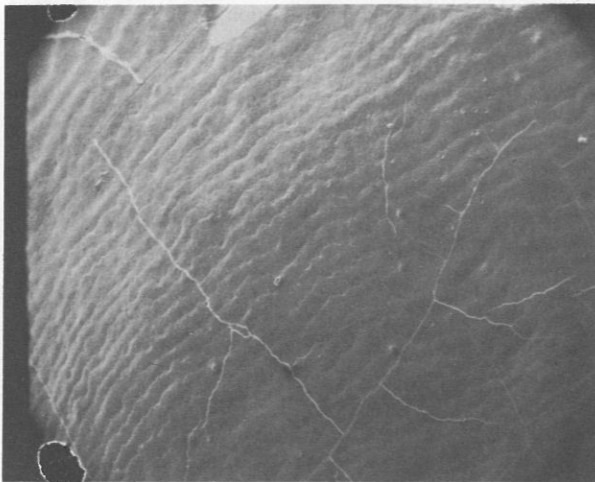


Figure 7.—*S. sanguis* on enamel after treatment with dextranase. Compare with Figures 5 & 6. (Original magnification: X55)

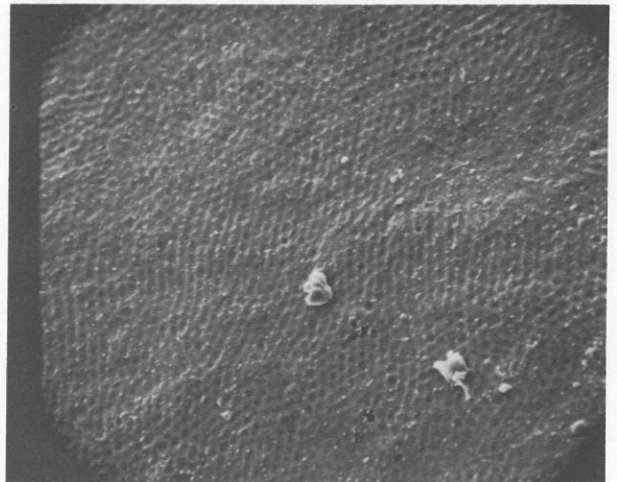


Figure 9.—Appearance of fluoridated-enamel surface after incubation with *S. mutans*. Compare with Figure 8. (Original magnification: X280)

dextranase. This may account for the equivocal results reported when dextranase was used as a mouth rinse in clinical studies.^{16,17,18} These findings support the results of Schachtele, et al.,¹⁹ and those of Newbrum.²⁰

It was also observed that *S. mutans* caused greater destruction to the samples than did *S. sanguis*. Preliminary tests with a 10% topical stannous-fluoride solution, applied to enamel samples prior to incubation with these microorganisms, produced results similar to those obtained with the dextranase; i.e., plaque growth on these samples was significantly inhibited for both streptococcal strains, but *S. mutans* appeared to be more resistant to fluoride inhibition than *S. sanguis*. Additionally, the fluoridated samples exhibited increased resistance to demineralization by bacterial

acids when compared with the nonfluoridated samples. (Figures 8 and 9)

Enamel resistance to caries has been attributed by many to the conversion of hydroxyapatite in enamel, to the less soluble fluorapatite. However, in our studies, culture tubes containing fluoridated samples showed a rise in media pH toward neutrality, after incubation, when compared to media containing nonfluoridated samples. This implies an inhibition of bacterial-acid production. Such findings are in complete agreement with those of Jenkins, et al.,²¹ and Edgar, et al.²² The mean pH in the *S. mutans* media containing nonfluoridated samples was 3.9; in the *S. sanguis* media, 4.2; in the media containing fluoridated samples, 4.3 for *S. mutans*; and 4.7 for *S. sanguis*. If these results can be consistently duplicated, it would

appear that fluorides may offer several modes of protective action:

1. Decreasing enamel crystallite solubility
2. Inhibiting streptococcal growth
3. Inhibiting bacterial-acid production.

Plaque is composed of numerous cariogenic microorganisms of varying virulence. Studies such as these may help to identify the most virulent of these etiologic microorganisms. Specific chemotherapeutic control over them, rather than over the complex gamut of plaque microorganisms, may help to eliminate the many lesser, plaque pathogens which do not produce the sticky mucopolysaccharides. Thus the identification and control of the more virulent cariogens may be of importance in producing an attenuated-plaque environment.

SUMMARY

In summary, the joint AFIP and NMRI studies in early enamel infection are producing the following results:

1. Information regarding variations in enamel topography, their precise locations, and varied susceptibility to demineralizing agents. This may help to pinpoint the sites more susceptible to cariogenic attack, toward which clinicians may profitably direct preventive efforts.
2. Illustrations of plaque adhesion, via dextran and other types of bacterial mucopolysaccharides, are being evaluated.
3. Effects of chemotherapeutic agents (dextranase and stannous fluoride) on *S. mutans* and *S. sanguis*, respectively, are being assessed. Both agents apparently result in less plaque adhesion, with *S. mutans* showing greater tenacity and destructive potency than *S. sanguis*.

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Developmental Hyperactivity in the Military Child: Response to Stimulant Medication

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There has been an upsurge of interest over the past ten years in the so-called hyperactive or hyperkinetic child, partially defined by Werry¹ as a child with a total daily-motor activity which is significantly greater than the norm. Other diagnostic terminologies applied to these youngsters include "brain injured," "minimally brain damaged," or "minimal brain dysfunction syndrome (MBD)," and "minimal cerebral dysfunction."^{2,3} A Task Force, assembled under the aegis of the National Institute of Blindness and Neurological Diseases in 1963, further described such children as having average or near-average intelligence, and mild-to-severe learning and behavioral disorders; the assembly implied that such deviations were associated with functional disorders of the central nervous system.⁴ But there is no empirical basis for making such a judgment regarding the organic "quality" of developmental hyperactivity. No specific lesions definable by present-day technology, at least, have been found in brain substrate. Reports of electroencephalographic (EEG) abnormalities seem to be spurious, and the syndrome is still regarded in the

literature in terms of behavioral and learning disabilities. I have had the opportunity to study this phenomenon for the past year and one-half at Naval Hospital Camp Pendleton, and the purpose of this paper is to present seven cases that were discovered and treated in the child psychiatry consultative service, an adjunct to the pediatrics department.

METHODS AND RESULTS

Out of 60 children who were seen on an outpatient basis for psychiatric reasons, seven were felt to be representative of either preschool or school-age developmental hyperactivity. The questionnaire utilized as a screening device, for children who were clinically under suspicion for having hyperactivity is shown in Figure 1. While the mother filled out the questionnaire, the child would be examined clinically. The items listed in the questionnaire had been found in a previous study⁵ to correlate well with hyperactivity. Other developmental and psychological data were obtained from parental interviews. After one week of trial medication, the questionnaire was readministered to the mother, to determine whether or not any changes in behavior of the child had occurred. Table 1 provides a categorical breakdown of the seven cases seen, including the response of these children to medication.

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The opinions or assertions expressed herein are those of the author and are not to be construed as official or reflecting the views of the Navy Department or the naval service at large.

NAME _____ AGE _____ SEX _____

Has your child been diagnosed as hyperactive in past? _____

What age was this diagnosis made? _____

Is he receiving medications for hyperactivity now? _____

What medications _____ How much: _____

Did medications seem to improve his behavior? _____

Answer the following categories to the best of your ability.

MY CHILD	NO	SOME	MUCH
Dances about, wiggles hands	_____	_____	_____
Unusually active	_____	_____	_____
Unable to sit through school period	_____	_____	_____
Rocking, leg jiggling	_____	_____	_____
Unable to take corrections	_____	_____	_____
Poor relationships with peers	_____	_____	_____
Unable to follow directions	_____	_____	_____
Talks excessively	_____	_____	_____
Wears out shoes	_____	_____	_____
Unable to tolerate frustration	_____	_____	_____
Unable to sit through meal	_____	_____	_____
Defiant	_____	_____	_____
Wakes early	_____	_____	_____
Fights with peers	_____	_____	_____
Mischievous	_____	_____	_____
Temper tantrums	_____	_____	_____
Into everything	_____	_____	_____
Tells tall stories	_____	_____	_____
Wears out bikes	_____	_____	_____
Unpredictable behavior	_____	_____	_____
Unresponsive to discipline	_____	_____	_____
Doesn't complete projects	_____	_____	_____
Difficult to get to bed	_____	_____	_____
Lies	_____	_____	_____
Fights with siblings	_____	_____	_____
Doesn't listen through a story	_____	_____	_____
Heedless of danger	_____	_____	_____
Accident prone	_____	_____	_____
Destructive	_____	_____	_____
Demands money constantly	_____	_____	_____
Leaves doctor's office	_____	_____	_____
Unable to sit through haircut	_____	_____	_____
Unable to sit through TV program	_____	_____	_____
Wears out bed	_____	_____	_____

Figure 1. — Questionnaire For Significant Diagnostic Categories of Behavior.

TABLE 1. — Response of Seven Hyperactive Children to Medication.

CASE NO.	AGE (YEARS)	SEX	PSYCHOGENIC FACTORS	MEDICATIONS	RESPONSE TO MEDS	PSYCHOMETRICS
1	4	Male	Not significant	Dextroamphetamine 2.5 mg b.i.d.	Excellent	No
2	4	Male	Highly significant	Dextroamphetamine 2.5 mg b.i.d.	Excellent	No
3	5	Male	Significant	Methylphenidate 5 mg b.i.d.	Excellent	Yes
4	9	Male	Highly significant	Methylphenidate 5 mg b.i.d.	None	Yes
5	6	Male	Not significant	Dextroamphetamine 5 mg b.i.d.	Excellent	No
6	6	Male	Highly significant	Methylphenidate 10 mg b.i.d.	Fair	Yes
7	6	Male	Highly significant	Methylphenidate 10 mg b.i.d.	Good	No

CLINICAL PICTURE

I have found it useful to think of the hyperactive child in terms of two specific age groups: the preschooler, and the school-age child. However, this is a relative matter, since, as Werry⁶ points out hyperactivity is generally present from the earliest years of life. It serves to emphasize that referral sources vary with the age of the child. In the case of the preschooler, the child is often brought in by the mother and described as being constantly "on the go," filled with boundless energy and requiring almost constant watching. One's index of suspicion should be raised if there is a history of the child's crawling out of his crib, playpen, or yard at a very early age. The parents may indicate that the child seems to require less sleep than his peers or sibs.

Case No. 1. R.N. is a four-year-old male dependent, evaluated by the pediatrics service because of hyperactivity and, to the consternation of the mother, removal from therapy with dextroamphetamine, 2.5 mg b.i.d., despite the remarkable positive response to it in the past. At the time of referral, R.N.'s mother reported almost-total disorganization of his behavior at home. "He doesn't mind, he's into everything and I'm at my wits' end." The mother provided a past history strongly corroborative of hyperkinesis, including: precocious

motor development; climbing out of the crib; and recently, a great capacity for tuning out herself and others in the environment. In the clinic R.N. opened drawers, threw toys provided him about the room, and was, indeed "into everything." The original medication was reinstituted and immediately produced, once again, the manageable and responsive boy that had previously emerged; four months later, on follow-up examination he remained improved.

Comment: This case illustrates a number of features of the hyperactive-child syndrome. First, if medication is going to be effective, it will invariably become so within 24 hours. Secondly, some physicians are reluctant to try, or continue stimulant medications in a child so young, influenced by adverse value judgments regarding the use of "speed," in spite of the small and non-addicting doses utilized in most children with hyperkinesis. There is a tendency to "put the blame" on inadequate mothering, especially if the mother, in her desperation and knowledge of the good results previously obtained with stimulants, appears demanding or tearful.

Case No. 2. G.H. is a four-year-old male brought in by his mother, who complained of his unusual high-activity levels, excessive talking, defiance, and propensity for finding dangerous situations about the house. He

required almost constant watching. G.H.'s mother appeared chronically depressed and immature, and it was felt initially that a non-coping maternal influence, with little consistency in the way that the mother related to G.H. was important in his behavioral disorder. He seemed to be able to manipulate her at will. "When his father comes home, he minds him. He just seems to shut me out," the mother remarked. The parents had married in their teens; the marriage seemed to be in deep trouble, and was punctuated by periodic separation. Mother had recurrent fantasies of taking off and leaving G.H. with his father. A screening questionnaire for hyperactive children was completed and interpreted as highly positive, however. G.H. was placed on oral dextro-amphetamine therapy, 2.5 mg b.i.d., after supportive measures and concrete suggestions for new ways of relating to him at home, had failed. Follow-up examination one week later revealed a marked improvement in G.H.'s behavior. In the clinic, he demonstrated less distractability and more perseverance in play tasks given to him. Responses to questions in the questionnaire were reversed, reflecting the mother's subjective impressions of her son's improved behavior. The mother noted vast improvement in her relationship to G.H. and husband, although she continued to require direction and support for her own dependency needs.

Comment: This case demonstrates that concomitant parental attitudes and conflicts can disguise hyperactivity in the preschooler. Of course, family pathology and hyperactivity are not mutually exclusive, and some parents may simply have a higher tolerance for some of the features of hyperactivity in their children than do other parents with their's. It is sometimes difficult to "tease out" the predominant factor without the useful employment of psychometrics, as the next case will illustrate.

Case No. 3. This five-year-old male was referred from pediatrics after the mother, describing her tribulations to a physician, completely "broke down" in the interview situation and indicated that loss of control was imminent: "I'd just as soon hit him, but that would make me a child beater." She frequently remarked that B.N.'s manner of relating to the world, at home and preschool nursery, was to "destroy, pillage and burn." Her marriage to a self-sufficient, rather aloof, Marine officer offered her little in the way of support at home. B.N. was the product of a normal gestation but weighed nine and one-half pounds at birth. His delivery was rapid and posterior. From the very beginning, he seemed unusually active. The questionnaire responses were highly positive for developmental hyperactivity. There was a history of previous improve-

ment in behavior associated with amphetamine therapy instituted at three and one-half years of age, but tolerance to this medication had apparently developed. I felt that there was considerable evidence for a psychogenic component to B.N.'s behavior, and psychometrics confirmed this impression. It was learned that B.N. had experienced a chronic deprivation of firm and consistent parental control in the home setting. Full-time employment of his mother, while the father served on overseas duty during B.N.'s second year of life, suggested poor internalization of impulse controls during this critical developmental stage. Even their choice of a particular nickname suggested that both parents were receiving unconscious vicarious gratification from B.N.'s aggressive, hypermasculine, social role. On the other hand, the child's performance on the Bender-Gestalt test indicated that he was functioning at a level below that of the average five-year-old, in perceptual motor areas. In copying the Bender geometric figures, B.N. failed to visually check back and forth between the presented model, and his moving hand.

With considerable evidence for developmental hyperactivity, B.N. was placed on a different medication than had been used previously; he received oral methylphenidate, 5 mg b.i.d., and responded well. Monthly follow-up evaluations have been conducted; considerably less strain on the marriage, and on the relationship between B.N. and his mother has been observed.

Comment: This case illustrates the propensity of many children who receive stimulant medications to develop tolerance to the drug. The problem can be resolved by increasing the dosage; by instituting "drug holidays," where the child is removed from the medication for a week or two and then restarted at the same dosage; or, as in this case, by changing medications.

Another instructive aspect of this case history is the observation that primary hyperactivity can be influenced by psychological factors, which, in some cases seem to enhance the primary disability.

Case No. 4. L.O., a nine-year-old male was referred to pediatrics by his schoolteacher who had observed and reported to his mother such diverse behaviors as restlessness in the classroom, distractability, lack of attention to assigned tasks, and more importantly, antisocial activities. On one occasion loss of temper had led to the attempted "strangling" of a peer. The mother described behavior problems beginning in kindergarten, right about the time that his father (with whom L.O. had established a close relationship) had departed on an overseas assignment. The paternal relationship was colored, however, by the father's firm, and at times harsh disciplinary standards that included the liberal use

of corporal punishment. The mother appeared to be depressed, and rather helpless before L.O.'s onslaughts. L.O. had been placed on stimulant medication and major tranquilizing agents in the past, but with little effect. Psychometrics indicated mild perceptual dysfunctions, and poor impulse control. In the clinic, L.O. was one of the most restless youngsters in the series. He was unable to sit quietly, and his attention was quickly diverted from stimulus to stimulus. A smiling facies seemed to be hiding much of the depression which L.O. was experiencing. Since a previous trial of methylphenidate treatment had been of equivocal value, L.O. was restarted on that medication, and special educational methods were applied to supplement his classroom work. The medication effected little change in his behavior, but he has continued in the special classes with moderate improvement.

Comment: L.O. presents the classic school-age hyperactivity which failed to yield to the simple application of medication. When medication does fail, however, other resources can be found in operant conditioning or behavioral-modification techniques, in the classroom and at home.

DISCUSSION

In spite of the fact that some studies view drug treatment as one of the less effective treatment measures in hyperactivity, six out of seven of our children who were treated with either methylphenidate or amphetamine responded favorably to these drugs initially, and were continuing to do so at least three months later. There were no control groups in this study to eliminate the placebo effect, but three double-blind studies using methylphenidate^{7,8,9} have shown this drug to be more effective than placebo in modifying motor skills and behavior, not only in outpatient children with hyperactivity and learning disabilities, but also in institutionalized retarded groups. The busy practicing pediatrician can find himself under considerable pressure from the harassed parent of a preschooler, or the teacher of a school-age child with behavior problems, to prescribe stimulant medications for that child. Depending on the physician's temperament and/or knowledge of the syndrome, he may quickly yield to such prodding without adequate investigation of the developmental history or psychological concomitants, or he may balk at prescribing medication even for "trial" purposes. Both extremes should be avoided, yet both are understandable in light of the confusion surrounding developmental hyperactivity and its etiology.

Developmental hyperactivity is not so much a specific diagnosis as a constellation of behavioral symptoms.

These ranged from chronic impulsiveness and aggressive episodes, to lying and stealing, in our group of children. The latter behaviors are guaranteed to attract attention in the school situation, and the cited instances demonstrate that often it is the *quality* of the behavior rather than the *quantity* that brings a youngster to medical attention. As Werry¹⁰ points out, parents and teachers seldom complain about a child's activity level. They do complain about his behavior in a situational context, such as "constantly getting into things," aggressiveness toward other children and lack of attending capacities, or inability to remain seated in the classroom.

The fact that all of our patients were boys is in keeping with another well-known fact regarding hyperkinesis, that boys tend to be more susceptible to factors which produce the syndrome. Boys are often considered more active than girls, however, and I've wondered if there may be selective factors in school systems which tend to bring boys to our attention more often than girls. Since the majority of elementary teachers in this country are women, it may be easier for the girls in their charge to identify tasks required in the classroom, in much the same manner as girls find it easier to relate to maternal tasks at home.

Five out of our seven referrals seemed to present significant, or highly significant psychological factors in the family constellation; but I consider that in at least three of the cases, parental intolerance for a hyperactive child was the most important factor of all. There must be millions of children in this country who might reasonably be labeled hyperactive, yet never come to the attention of physicians or school authorities. Can we posit "super mothers" who deal with hyperactive behavior with such finesse that early maladaptive behavior never becomes "charged" emotionally? The same might apply to the skilled teacher, who perhaps instinctively knows when to isolate an acting-out youngster, or one who is about to do so in her classroom, or who gives such a child assignments that are more in keeping with his attention span or interest requirements during the course of a day.

SUMMARY

In summary, this report has considered seven male, military-dependent children, ranging in age from four to nine years, who presented with behavior characteristic of developmental hyperactivity. Six of the seven achieved adequate responses to stimulant medication and psychiatric supportive measures. A questionnaire, addressing symptoms common to the hyperactive child was utilized in identifying these children. In five of the

children, concomitant familial psychological factors seemed to be exerting considerable affect on the syndrome.

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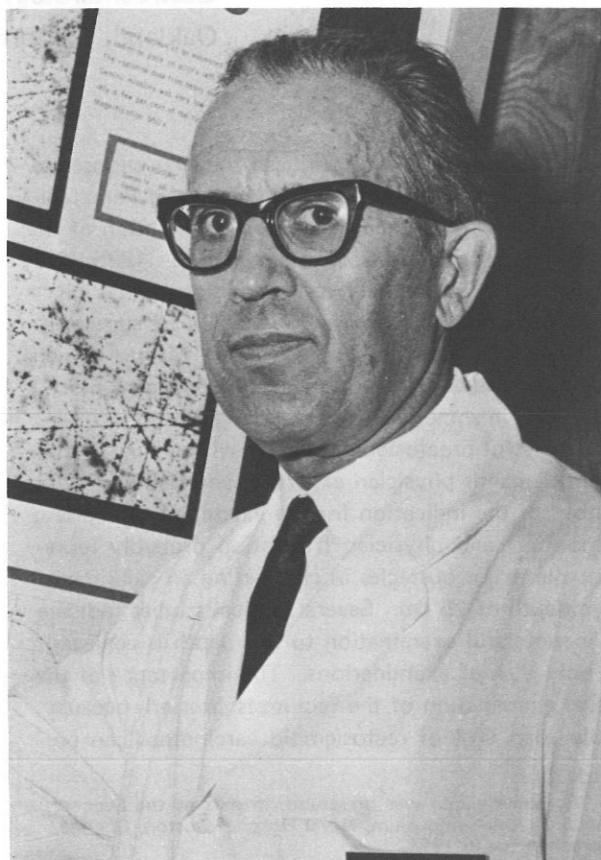
DR. SCHAEFER OFFICIAL SPEAKER

Dr. Hermann J. Schaefer, Chief of Biophysics at the Naval Aerospace Medical Research Laboratory, Pensacola, Fla., has returned from Germany after contributing to meetings conducted in Darmstadt and Frankfurt. As official speaker, he also participated in an academic festival observing the 80th birthday of his former professor, Dr. Boris Rajewski, Director of the Max Planck Institute of Biophysics.

Some of the sessions were attended by German, French, and Russian scientists. A working group on space research dealt with the contribution of Germany's biostack to America's Apollo 16 and 17 missions.

Dr. Schaefer chided space scientists for not believing there would be "flashing lights" and other radiation phenomena beyond the earth's atmosphere, until astronauts reported they had actually seen them. He was first to recognize the microbeam effectiveness of harmful heavy nuclei in cosmic radiation. He has interpreted the significance of this, and other space-radiation phenomena in published articles.

The recipient of many awards and honors, Dr. Schaefer has had galactic-radiation-measuring packs placed on, or near astronauts on all American spaceflights; monitored subjects have included Pensacola's space monkey, "Miss Baker," and subsequent astronauts, up to those recently orbiting the earth on Skylab. The scientist is presently studying radiation at altitudes used by supersonic transports and military-jet aircraft.



CHIEF OF BIOPHYSICS.—Dr. Hermann J. Schaefer, Naval Aerospace Medical Research Laboratory, Pensacola, Fla. (PAO, Nav Aerospace Med Center, Pensacola, Fla.)

THE GASTROENTEROLOGISTS' CORNER

Nonsurgical Direct Visualization of the Colon

By CDR Gerald T. Roling, MC, USN, and
LCDR Richard M. Luros, MC, USNR;
Gastroenterology Branch, Naval Hospital,
Oakland, California 94627.

At the time that he introduced the first endoscope in 1852, it is doubtful that Desormeaux of Paris realized the extent to which endoscopic evaluation of the intestinal tract would be pursued. And in 1895, Kelly of Baltimore most likely never envisioned that his functional, but rigid proctoscope would be surpassed 75 years later by a flexible instrument through which lesions of the entire colon could be visualized, biopsied, and, in some cases removed.

Successful proctosigmoidoscopy with a rigid instrument demands physician expertise, and patient "acceptance" of the indication for the examination. Patient discomfort and physician frustration probably represent the major obstacles in completing an examination to a depth of 25 cm. Several clinical studies indicate that successful examination to this depth is achieved in only 50% of examinations. The importance of the visual examination of the rectum is stressed, because more than 50% of rectosigmoid carcinomas can be

detected by complete proctosigmoidoscopic examination with conventional instruments. In addition, some abnormality may be revealed by proctosigmoidoscopy in 5% of asymptomatic patients. There remains, however, that significant group of patients who are found to have higher lesions, polypoid disease, or questionable abnormality of the colon upon barium-enema examination.

In a study of 1124 patients with colonic polyps from the Massachusetts General Hospital, the majority of polyps appearing in late-middle and old age were located in the rectosigmoid area, and were benign.¹ However, a disturbing 12-percent incidence of carcinoma occurred in these patients. If we consider polyp size, the incidence of malignant disease was under one percent in polyps measuring one cm., or less in diameter. Surgical experience has dictated that when a colonic polyp measuring more than one cm. in size is detected, the patient should be considered for laparotomy. Because of the obvious complications that can follow laparotomy, not to mention the complications associated with opening the colon (both categories increased in poor-risk patients), satisfactory methods to evaluate polyps beyond the 25-cm. point have been highly desired and explored.

The above paper was presented, in part at the Second Annual Spring Symposium, Naval Hospital Boston, Chelsea, Massachusetts, in 1971.

The opinions or assertions expressed in the above article are those of the authors and are not to be construed as official or reflecting the views of the Navy Department or the naval service at large.

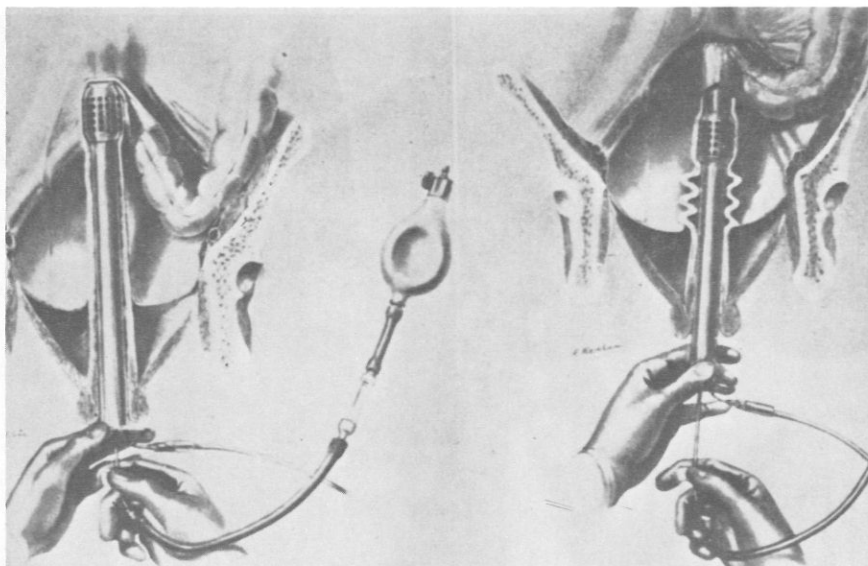


Figure 1.

The traction sigmoidoscope of Dr. A.E. Moore has been utilized for visualization of the rectal mucosa, above the 25-centimeter reach of the rigid sigmoidoscope. Taken from Moore AE: The traction sigmoidoscope. *Am J Surg* 90:374, 1955. (Reproduced here with the kind permission of the American Journal of Surgery, Dun-Donnelley Publishing Co.)

SURGICAL ENDEAVORS AT COLOSCOPY

In 1955 Dr. A.E. Moore devised a sigmoidoscope that allowed the sigmoid colon to be accordion-pleated over the end of the scope with suction and traction.² (See Figure 1.) Although he successfully removed pedunculated polyps from depth levels of 25 to 35 cm., the method has not been used widely — probably because the area of resection slips back, out of vision, once traction is released. Bleeding following polypectomy may, therefore be missed.

Ano-transabdominal polypectomy (Benjamin procedure) was introduced in 1963.³ At the time of laparotomy the general surgeon passes the sigmoidoscope per anus, and the sigmoid colon is then telescoped over the instrument, until the proctologist can reach and remove the polyp from below. Although this maneuver precludes complications associated with opening the bowel, the procedure is cumbersome and major surgery is still necessary.

The time-honored surgical technique for visualization of the entire colon is coloscopy.⁴ Multiple colotomies, followed by visual inspection of the remainder of the bowel are performed at the time of laparotomy. (See Figure 2.) Multiple colotomies increase the risk of postoperative complications due to leakage at suture lines. Until recently, this was the only available means of further delineating lesions of the colon.

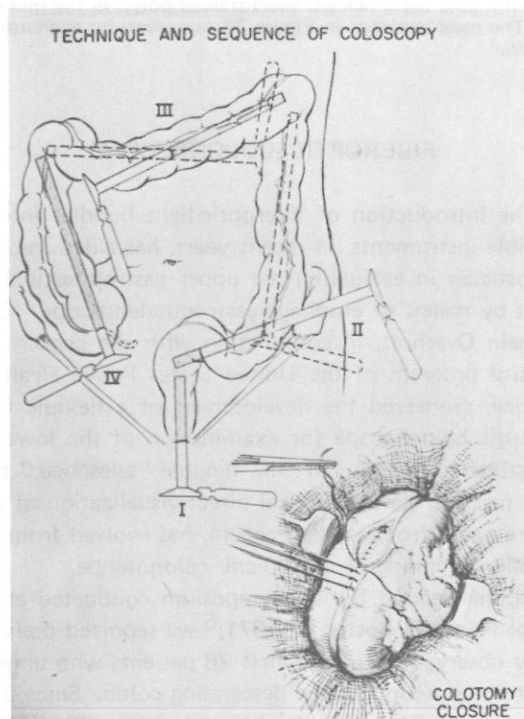


Figure 2.—PERFORMANCE OF COLOSCOPY AT THE TIME OF LAPAROTOMY. Four colotomies are necessary for complete visualization of the colonic mucosa. Taken from Deddish, MR: Coloscopy in the treatment of mucosal polyps of the colon. *Surg Clin North Am* 37:1287, 1957. (Reproduced here with the kind permission of the author, and WB Saunders Co.)

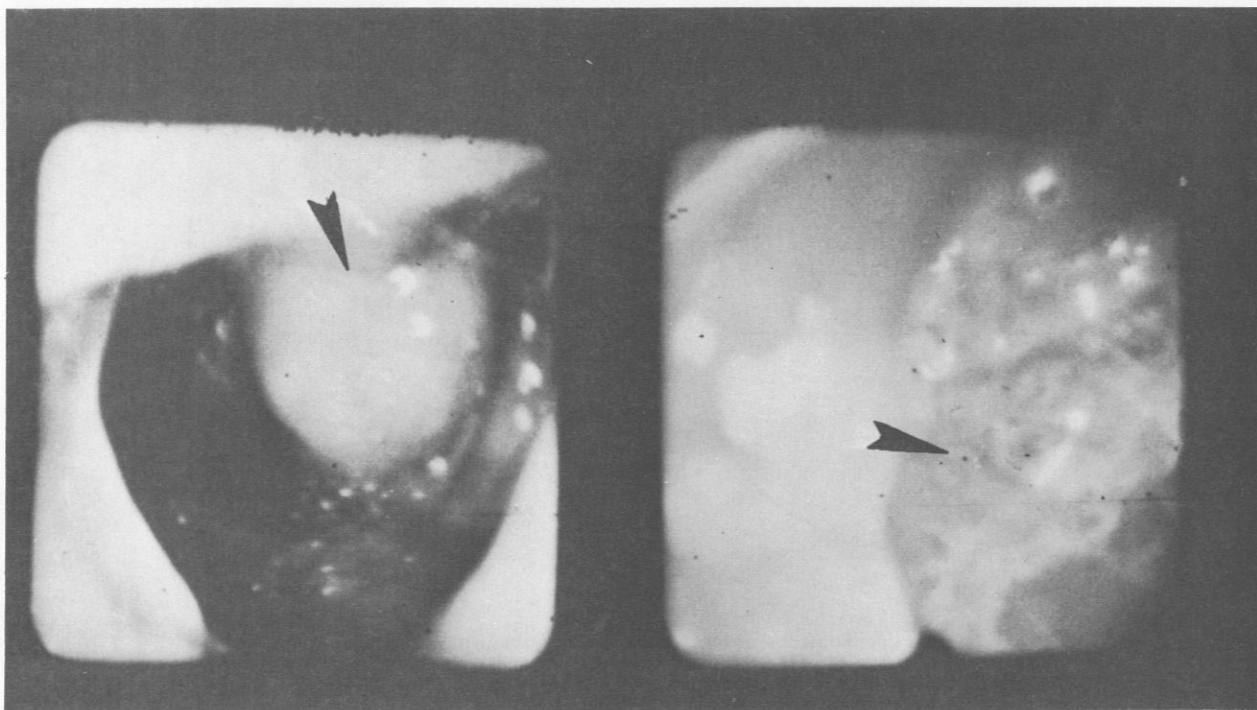


Figure 3A.

Figure 3B.

In Figure 3A a benign, short-stalked polyp in the mid-descending colon is demonstrated by colonoscopy. The mass depicted in Figure 3B represents an adenocarcinoma. This mucosal mass was located in the hepatic flexure of the colon.

FIBEROPTIC COLONOSCOPY

The introduction of fiberoptic-light bundles into flexible instruments, in recent years, has aided the diagnostician in evaluating the upper gastrointestinal tract by means of esophago-gastroduodenoscopy. Dr. Bergein Overholt, in conjunction with the cancer-control program of the United States Public Health Service, pioneered the development of a flexible fiberoptic colonoscope for examination of the lower-intestinal tract.⁵ A 187-cm., flexible "telescope," that now permits the nonsurgical direct visualization of the entire colon from anus to cecum, has evolved from the humble beginning of the 80-cm. colonoscope.

At the Second Spring Symposium conducted at Naval Hospital, Boston in 1971,⁶ we reported preliminary observations of our first 28 patients who underwent colonoscopy of the descending colon. Since then we have acquired considerable experience, first with the 80-cm. scope, and for the past year with the 187-cm. instrument. Early experience has shown that we can add a new dimension to the evaluation of colonic pathology. No longer need we be limited to the black-and-white shadow-reading of barium enemas;

in full-color we can now visualize inflammatory disease, polypoid disease, and neoplastic change.

Two years ago Dr. H. Shinya, and his colleagues from New York intrigued the audience at the American Society for Gastrointestinal Endoscopy meeting, with a movie of polypectomy via the fiberoptic colonoscope.⁷ Manufacturers have subsequently provided a technically satisfactory cautery-snare to perform surgical polypectomy in any area of the colon during colonoscopy. Continued experience with this procedure has resulted in morbidity and mortality rates which are lower than those observed following laparotomy and colotomy.

Colonoscopy is indicated in patients who present: the radiographic suggestion of a lesion above the reach of the rigid sigmoidoscope, unexplained bleeding from the lower intestinal tract, and radiographically demonstrated polyps of the intra-abdominal colon. Colonoscopy is also indicated in the evaluation of colonic-anastomotic sites, where surgery has resulted in mucosal deformity. Experience with the snare-cautery removal of polyps provides a new dimension which may be appreciated by the endoscopist as he dictates surgical-operative reports.

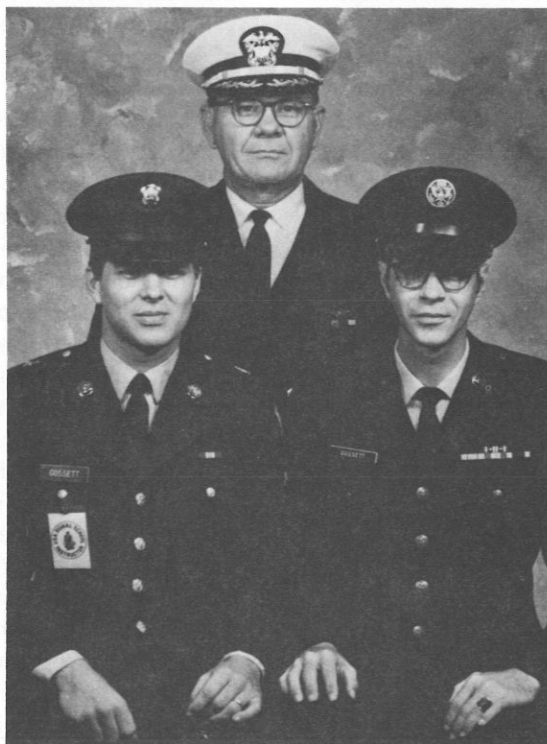
SUMMARY

Colonoscopy is a procedure that is preferred over routine, rigid-sigmoidoscopic examination by many patients. In patients who present a history of several previous biopsy examinations that were reported benign, and whose medical conditions would appear to preclude surgery as a formidable risk, it seems justifiable to follow sessile-polypoid lesions by colonoscopy, unless the polyp enlarges or shows endoscopic signs of invasiveness. Pedunculated polyps of any but great size, can be treated effectively by snare-cautery removal.

Colonoscopy is not intended to supplant routine proctosigmoidoscopy. The procedure is more time consuming, and it cannot be used in a screening setting. If in dealing with polyps, the surgeon could slip in, snip off, and sneak out without fear of complications, colonoscopy would have no future. Since that is not the case, the nonsurgical visualization of the colon can add further preoperative information to aid the surgeon, and in specific instances, may obviate the need for surgical intervention.

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NO COAST GUARD?—CAPT Clarence E. Gossett, MC, USN (center) poses with his Army and Air Force sons, SP4 Lawrence G. Gossett (left), and SSGT William E. Gossett (right). Lawrence is an instructor in Fixed Crypto Branch, Fort Monmouth, N.J. William is assigned to the USAF Technical Applications Center, Patrick AFB, Fla. CAPT Gossett, Board certified as an Aerospace Medicine and Ear-Nose and Throat specialist, is a department head at the Naval Aerospace Medical Institute, Pensacola, Fla. The military trio compared notes at a reunion at their home in Gulf Breeze, Fla. (PAO, Nav Aerospace Med Center, Pensacola, Fla.) 🍀

NEW OUTPATIENT CLINIC



U.S. NAVAL HOSPITAL, SUBIC BAY, R.P.

A new outpatient facility in Building 3022, to the rear of the main-hospital building, recently opened at Subic Bay. The newly converted facility was formerly an open-ward area.

Participating in the dedication ceremony conducted on 5 June 1973 were: RADM D.B. Shelton, Commander of the Naval Base and U.S. Naval Forces, Philippines; CAPT H.P. Pariser, MC, USN, CO, U.S. Naval Hospital, Subic Bay, R.P.; LCDR D. Sheaffer, Resident Officer-in-Charge of Construction, Subic Bay; CDR G.W. Baldauf, Administrative Officer, U.S. Naval Hospital, Subic Bay; and Mr. G.M. Quiambao of the Q.K. Calderon Construction Co., Inc.

In the new outpatient department (OPD), the total available space has been tripled and physicians have two examining rooms at their personal disposal, where formerly they were limited to one examining room per

doctor. Physicians can now manage their patients with greater efficiency, since one patient is being prepared in one room at the same time that the physician is examining another patient in another room. The decreased waiting time and increased patient turnover that evolved were immediately evident.

The new OPD reflects the present Navy-wide trend of separating outpatient from inpatient areas. By concentrating outpatient facilities in one area, patient traffic and travel time are curtailed while convenience is increased. The added advantage of eliminating outside traffic from hospital areas is highly desirable.

Separation of services within the new OPD has also been achieved. Three of the four wings in the building are dedicated to outpatient services with individual wings for pediatrics, obstetrics-gynecology, and minor surgery. Contact between pregnant women and sick children, as an example, has thereby been eliminated. The optometry and immunization clinics were relocated in conjunction with the new arrangement.

Smoother patient flow has also resulted from the new system for appointment and records offices. Patients with appointments now proceed directly to the specific clinic where their records will be waiting, precluding confusion and crowding in a central waiting area. Only those without appointments now enter a central area to obtain their records, and be directed to the appropriate clinic.

The former outpatient spaces in the main-hospital building are being converted and utilized to provide additional space for inpatients, and for necessary expansion of laboratory, X-ray and orthopedic facilities. Future plans include improvements for the records office. It is obvious that the inpatients will also benefit from added space and diminished traffic.



RIBBON-CUTTING CEREMONY.—Participating in the dedication ceremonies at the new OPD of U.S. Nav Hosp Subic Bay were (from left to right): LCDR Sheaffer, CAPT H.P. Pariser, RADM D.B. Shelton, CDR G.W. Baldauf, and Mr. Quiambao.

The new OPD is the most visible of a number of projects being undertaken by the Naval Hospital to improve delivery of medical services to dependents of active duty and retired personnel. By consolidating services into one area and increasing the total space available for outpatients, a major step in the direction of improved patient-care facilities has been taken.

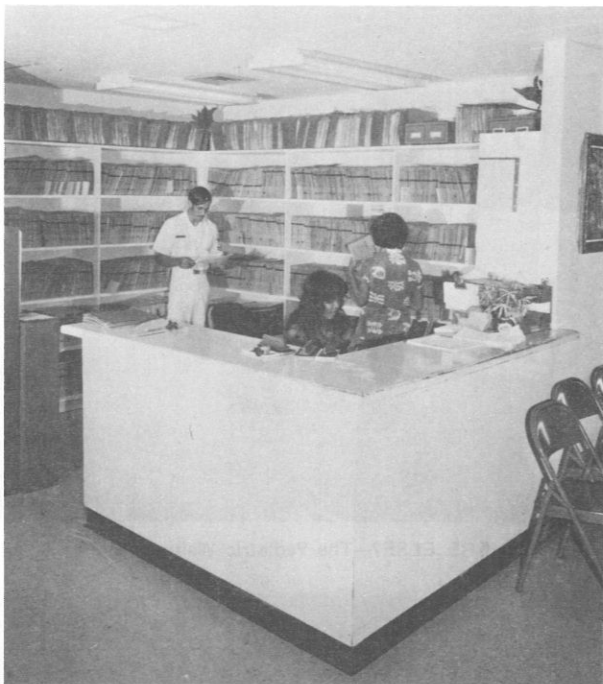
The new OPD Building was renovated by the Q.K. Calderon Construction Co., Inc., under the direction of Mr. Q.K. Calderon. The work was coordinated through the Officer-in-Charge of Construction, Southwest Pacific under the direction of CAPT H.D. Graessle; and the Resident Officer-in-Charge of Construction Subic, LCDR Don Sheaffer. The project was designed by American engineers and architects. LTJG S.A. Westfall was the project manager, and Mr. Greg Salazer was the government inspector.



AN OVERALL VIEW.—The new outpatient clinic for dependents has opened for business at U.S. Nav Hosp Subic Bay, R.P.



WHERE TO?—Center hallway entrance to dependents' OPD is delightfully explicit.



CALM AND INVITING.—The Medical Records section appears sane and organized.



EVEN IN FULL SWING.—Medical Records section, still sane and organized.



READY TO SERVE.—On deck for business, a crew awaits action in the waiting room for pediatrics, immunizations, and surgery.



WHERE ELSE?—The Pediatric Waiting Room.



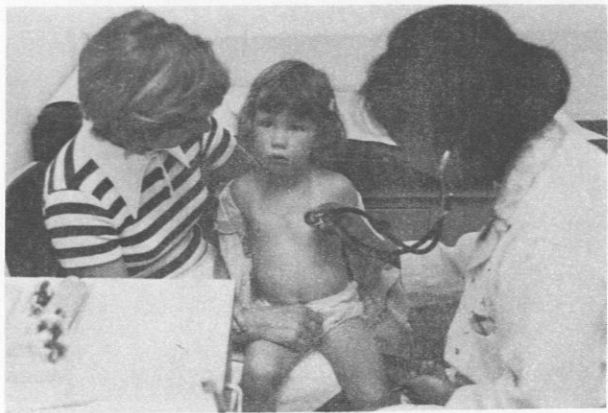
PEDIATRIC WAITING ROOM.—CDR G.W. Baldauf, MSC, USN, AO at U.S. Nav Hosp Subic, communes with an articulate art critic.



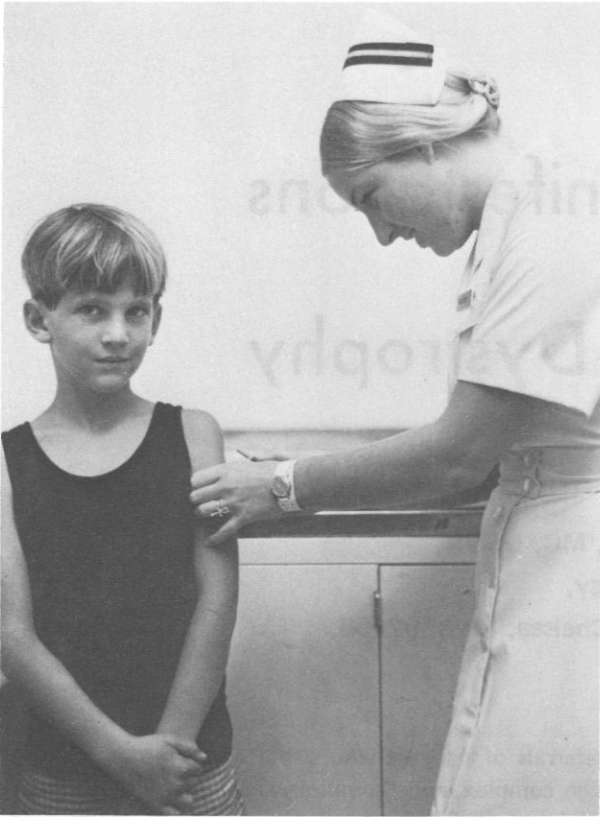
LIGHT AND AIRY.—Pediatric waiting room and clinical spaces.



IN THE PEDIATRIC CLINIC.—Staff Resident Dr. Jose Lee (right) attends mother and patient.



COLD IT'S NOT.—Staff Pediatrician, R.S. Nicodemus, M.D. (right) examines child in the clinic.



EVER BEEN STUNG BY A BEE?—ENS M. McCormick, NC, USNR provides immunization for a politely resigned young man.



OB-GYN CLINIC.—Staff nurse Arcelia G. Maghirang (left) and Evangeline T. Cayton, M.D. (center) consult with patient.



PRIVACY ASSURED.—CDR N.D. Nelson, MC, USN visits with Mrs. N.W. Owen.



EXIT SMILING.—Outpatients approve of the enlightened changes being executed at their hospital and OPD. 🍀

Systemic Manifestations of Myotonic Dystrophy

By LT Nathan K. Blank, MC, USNR,
Department of Neurology,
Naval Hospital Boston, Chelsea, Mass. 02150.

INTRODUCTION

The Department of Neurology at the Naval Hospital, Boston observes a highly biased population of rare neurological disorders. We are impressed by the frequent

TABLE I. — SYSTEMIC COMPLICATIONS
OF MYOTONIC DYSTROPHY

1. Cataracts.
2. Frontal baldness.
3. Progressive dementia or mental defects.
4. Skull radiographic changes.
5. Progressive pneumoencephalographic ventricular enlargement.
6. GI dysfunction (dysphagia, megacolon, cholelithiasis, malabsorption).
7. Cardiac involvement (conduction defects, Stokes-Adams disease, CHF).
8. Respiratory insufficiency.
9. Gonadal dysfunction.
10. Excess catabolism of IgG.³⁹
11. Questionable thyroid and adrenal dysfunction.
12. Impaired glucose utilization.

The opinions or assertions expressed herein are those of the author and are not to be construed as official, or reflecting the views of the Navy Department or the naval service at large.

referrals of patients who suffer a specific symptom or sign complex, and "a muscle-weakness problem" that we have rapidly diagnosed as myotonic dystrophy. In the following brief review of the classical and more recently described systemic manifestations of this disease, major dysfunctions as they relate to specific medical specialties will be reemphasized. (See Table I)

NEUROLOGY

Myotonic dystrophy is a heredofamilial disorder inherited as an autosomal-dominant trait. The usual age of onset is in infancy. The onset is ordinarily insidious, but many symptoms are acutely precipitated by stress such as fright, illness, and trauma. The muscle-wasting distribution, unlike most dystrophic disorders, is a combination of both proximal and distal involvement, with the initial involvement occurring in the hands. The postural muscles, such as the trunk and neck extensors, glutei, and iliopsoas are usually spared until the late terminal stages. Myopathic facies with snarling and sneering expressions, ptosis, and sometimes tongue wasting, are characteristic of this disorder. The abdominal musculature is frequently weak, but unlike other dystrophies, pseudohypertrophy is rare.¹ Both the deep-tendon and superficial reflexes are spared, and sensory abnormalities are rarely described.

Myotonia, which is the most constant clinical feature

in myotonic dystrophy, is also found in numerous other disorders not considered in this review. It is a phenomenon defined as a state of delayed relaxation of skeletal muscle that follows a voluntary contraction, or mechanical, electrical, or chemical stimulation.¹ In electromyographic recordings, after stimulation with the recording electrode, amplified motor-unit action potentials are rapidly repeating and, in turn, illustrate the characteristic "dive bombing" phenomenon. Electromyography is therefore an important tool in defining an occult myotonia, or in verifying a clinically obvious diagnosis of myotonic dystrophy.

The histological findings in myotonic dystrophy are similar to those observed in other dystrophic disorders. The typical picture is characterized by: an increased number of nuclei in the sarcolemma; variable fiber-diameter size; degenerative and regenerative fibers; and in advanced stages, fibrous connective-tissue infiltration and lipomatosis.²

The current theory that myotonia is caused by altered muscle-membrane physiology with resulting hypersensitive muscle fibers has led to a number of clinical trials of agents that pharmacologically stabilize these muscle membranes. Quinine, quinidine, procaine, adrenocorticotrophic hormone (ACTH), and Dilantin have all been used, and have produced a variable decrease in percussion and grasp myotonia. A double-blind study demonstrates that Dilantin and procainamide are equally effective in relieving myotonia, both subjectively and objectively.³ In the total course of the disease, however, no known agent has altered the progression, nor greatly enhanced patient productivity and quality of life. Few patients survive beyond the sixth decade, and the disease progresses steadily without remissions or arrests.¹ (See Table II)

TABLE II. — NEUROLOGICAL
MANIFESTATIONS

1. Autosomal dominant.
2. Age of onset usually in the mid-20s.
3. Muscle wasting, distal and proximal distribution. Postural muscles are spared.
4. Percussion, grasp, and electrical myotonia always present.
5. Course is progressive, without remissions or arrests.

PEDIATRICS

Myotonic dystrophy is classically regarded as one of the nonpediatric muscular disorders. Only rare cases in the pediatric-age group are described prior to 1960, when Vanier reported six children with congenital-facial

diplegia and myotonia.⁴ Dodge, et al., classify their patients into several clinical groups. The first presents symptomatic early-life myopathy including facial diplegia, generalized hypotonia, and retarded motor development. The second group presents myotonia as the sole or prominent manifestation, and the third group demonstrates ptosis as the earliest sign.⁵ Watters adds a fourth group consisting of children with moderate muscle weakness, slender muscle mass, occult myotonia, speech abnormalities, and mental retardation.⁶

Childhood myotonic dystrophy is frequently misdiagnosed as Werdnig-Hoffmann disease, perinatal brain damage, and benign congenital hypotonia. If sought after, percussion myotonia or grasp myotonia can usually be demonstrated.⁵ The electromyogram (EMG) is always characteristic of myotonia. Nearly all of the childhood forms of myotonic dystrophy have positive family histories. Most children present with nursing problems due to facial weakness; but baldness, cataracts, and endocrinopathies are rarely observed.⁷ It must be kept in mind, however, that manifestations of myotonic dystrophy in other organ systems may initially obscure the underlying disorder. (See Table III)

TABLE III. — CHILDHOOD MYOTONIC
DYSTROPHY

1. Congenital diplegia, generalized hypotonia, ptosis.
2. Mental, motor, and speech retardation.
3. Myotonia (grasp and percussion) usually present.
4. EMG - myotonia always present.
5. Most cases have positive family history of myotonic dystrophy.
6. Some initially present with nursing problems.
7. Baldness, cataracts, and endocrinopathies are rare.

OBSTETRICS — GENETICS

Infertility in a couple is not an uncommon presenting symptom which may lead an obstetrician to uncover a diagnosis of myotonic dystrophy. As will be mentioned later, both male and female gonadal dysfunction are common findings in this disorder. If a female with the disease does become pregnant, however, the physician must be aware of the fact that uterine muscles may also be involved, and that normal progression through the stages of labor may be severely compromised.^{8,9} The complications of anesthesia must also be considered, and these will be addressed later in this review.

As stated in the literature, the incidence of myotonic dystrophy is estimated at from 1:100,000 to 37:100,000. Transmission is by an autosomal-dominant gene, with complete penetrance and high variability of expression.¹⁰

Simply stated, a woman with myotonic dystrophy has a chance that one-half of her offspring will present some features of this condition. To counsel for, or against allowing a pregnancy to occur, or to be carried to term, becomes an individual problem that must be resolved between the patient and physician.

CARDIOLOGY

Cardiac symptoms are not common in myotonic dystrophy, despite the fact that they represent the most serious and lethal variant in the earlier-age groups. A few cases of fatal acute congestive heart failure, associated with atrial fibrillation are described.¹¹ It is reported that 40-65% of patients with this condition demonstrate electrocardiographic conduction defects, the most frequent of which is prolongation of the P-R interval.^{12,1} Other not-uncommon EKG findings include bundle-branch blocks, atrial fibrillation and flutter, T wave and S-T segment changes, and ectopic ventricular beats. The conduction defects are not influenced by quinine sulfate, however, administered in doses which are adequate to relieve the myotonia of grasp.³ Holt and Lambert found that 20% of their myotonia dystrophics had bradycardia of less than 60 beats per minute, and not infrequent Stokes-Adams attacks.¹² Twenty-five percent of the patients also had systolic blood-pressure measurements of less than 100 mm Hg.^{12,13}

The cardiac pathological findings are similar to those of skeletal muscle in myotonic dystrophy: fibrosis, fat replacement, and significant muscle-fiber loss are the most evident findings.^{2,14} (See Table IV)

TABLE IV. — CARDIAC MANIFESTATIONS

1. EKG changes: Prolonged P-R interval, bundle-branch blocks, atrial fibrillation or flutter, T wave and S-T changes, ectopic ventricular beats.
2. Bradycardia.
3. Stokes-Adams attacks.
4. Low systolic blood pressures.
5. Acute congestive heart failure.

PULMONARY

Pulmonary insufficiency and repeated respiratory infections have recently been reemphasized in the literature, as other lethal and/or serious complications of myotonic dystrophy.⁷ The most common pulmonary symptom is dyspnea on exertion. Two factors are significant in producing the respiratory impairment. The first is a moderate degree of incoordination of the oro-

nasopharyngeal muscles, which produces disturbances in deglutition and frequent aspiration pneumonitis. The second factor is a "hypoventilation syndrome" resulting from multiple disturbances.¹⁵ Kilburn describes this alveolar hypoventilation syndrome (which includes somnolence, lethargy, Cheyne-Stokes breathing, respiratory cyanosis, hypercapnia, and hypoxemia), as a result of chest-wall weakness and increased work of breathing.¹⁵ Myotonia is noted to involve both the intercostal muscles and diaphragm.¹ Benaim has observed that electromyographic myotonia of the intercostal muscles is decreased, as well as the degree of polycythemia, when patients receive quinine therapy.¹⁶ Reduction in total-lung capacity, vital capacity, and maximal-breathing capacity have been attributed to involvement of the above-mentioned muscles. However, Lee also reports impairment of sustained ventilation.¹⁷ In Gillam's review of myotonic dystrophies, the most striking respiratory abnormality is a reduction in maximum-expiratory pressure which is not due to weakness of facial musculature.¹⁸ Some authorities have also implicated a direct disturbance of the central-nervous system, aside from the muscular involvement, as a factor responsible for the somnolence observed in the hypoventilation syndrome.¹⁹ (See Table V)

TABLE V. — PULMONARY MANIFESTATIONS

1. Aspiration pneumonitis.
2. Reduced maximal-expiratory pressures.
3. Alveolar hypoventilation syndromes (somnolence, lethargy, Cheyne-Stokes breathing, cyanosis, hypercapnia, hypoxemia).
4. Question of primary respiratory central-nervous-system defect.

ENDOCRINOLOGY

Thyroid dysfunction has long been regarded as a common feature of myotonic dystrophy, but no consistent abnormality has been described. Resting colloid goiters, diffuse thyroid enlargements and normal glands, as well as reduced basal metabolic rates (BMRs) and protein-bound iodine (PBI) determinations, variable radioactive-iodine uptakes, and thyrotoxicosis have all been described in the literature.¹ The low BMRs are thought to reflect an extrathyroidal-hypometabolic state.²⁰ Lee, in summarizing his review of the medical literature, goes so far as to state that no evidence of intrinsic thyroid disease exists, and hence, thyroid dysfunction is not a part of the myotonic-dystrophy syndrome.¹⁷

Various degrees of testicular atrophy appear in 80%

of the cases, and only 20% of these males are fertile.²¹ Decreased libido, or impotence, with normal external genitalia is also observed. The primary degeneration of the seminiferous tubules is thought to be responsible for the significantly elevated pituitary gonadotrophins, even though the 17-ketosteroid levels are usually low.¹ The defect in this process is still unclear.

Gonadal dysfunction in females is often less prominent than in males. Many of the affected females have menstrual irregularities and irregular ovulation. Numerous investigators have attempted to describe the pathogenesis of the gonadal dysfunction, but all the published papers are inadequate in this regard.

Minor impairment of glucose tolerance is quite commonly associated with myotonic dystrophy, and is thought to be related to the abnormal muscular-metabolic rate rather than a relative-insulin insufficiency. Some authorities state that no significant increase in the incidence of diabetes mellitus exists in this group, when compared to a group of normal matched-age controls.¹⁷

The question of whether any endocrine deficiency does occur in myotonic dystrophy is being vigorously reevaluated. Drucker, et al., emphatically state that no evidence for adrenal cortical, thyroidal, ovarian, or pituitary deficiency exists in myotonic muscular dystrophy.²² Pruzanski, however, concludes that the endocrinopathy, which differs from case to case and gland to gland, is a definite sign but not a responsible cause of the myotonic dystrophy syndrome.¹⁴

OPHTHALMOLOGY

The first manifestations of myotonic dystrophy, and sometimes the only evidence of the disorder, are cataracts. They occur in approximately 90% of all patients with fully expressed myotonic dystrophy; and in 20% of this group, cataracts will significantly impair vision and will require extraction. Early in the disease, the punctate blue-green, yellow, and red opacities are localized in the cortex of the lens. Later, a typical mature cataract is observed.¹⁰ A high correlation between the occurrence of diabetes mellitus, and visual impairment secondary to changes in the lens, is found by Simon.²³ The lenticular opacifications have been noted to occur earlier in succeeding dystrophic generations; this occurrence is one of the most dramatic examples of the phenomenon of anticipation which appears in this syndrome.¹⁰

Other ophthalmological dysfunctions have been described in this disorder, and include spontaneous optic atrophy, exophthalmia, and retinal proliferation.¹⁰ Myotonia has also been demonstrated in the external ocular muscles.²⁴

GASTROENTEROLOGY

Dysfunction of the gastrointestinal system has not been overly emphasized, and when it does occur, skeletal muscle involvement is already apparent.²⁵ On the other hand, Goldberg and Sheft have recently described a 21-year-old active-duty soldier who presented with diffuse, intermittent, mild, lower-abdominal cramps. Barium-enema examination revealed a picture of a megacolon; a few months later, the soldier developed skeletal-muscle complaints and dysphagia, and a diagnosis of myotonic dystrophy was made.²⁶ It is evident, then, that this disorder must be considered in a differential diagnosis of adult-onset megacolon, even when skeletal muscle involvement is not present.

Smooth-muscle involvement is not infrequently involved in this disorder. Abnormalities of the anal sphincter may produce myotonic anal contractures, abnormal esophageal motility associated with dysphagia, gastric dilation, and even intestinal malabsorption with a sprue-like syndrome; all have been described in this disorder.^{26,27,28} Cholelithiasis and its symptoms occur in 25-50% of patients with this disorder.²⁹ Harvey and co-workers have shown that in these patients, the response to intravenously administered cholecystikinin is abnormal, as it produces either a delay in gallbladder contraction, or no contraction.³⁰ With normal cholesterol and bilirubin levels, it is hypothesized that this frequent gallbladder involvement is related to a primary-muscle dysfunction of the gallbladder, or the biliary tree. (See Table VI)

TABLE VI. — GASTROINTESTINAL MANIFESTATIONS

1. Incoordination of deglutition.
2. Esophageal-motility impairment.
3. Gastric dilation.
4. Megacolon.
5. Cholelithiasis.
6. Intestinal-malabsorption syndrome (sprue-like).

ANESTHESIOLOGY

The risk of anesthesia increases in patients with myotonic dystrophy, partially because of the impairment of ventilation, and reduced maximal-expiratory pressures.³¹ Some clinicians have described myotonic-dystrophic patients to be unduly sensitive to Pentothal, which during induction, produces a prolonged apnea and an abnormal degree of muscular relaxation.³² Since pneumonia is a frequent postoperative complication in

these patients undergoing major surgical procedures, close postoperative care should be maintained including tracheostomy, if necessary.²⁹ Pulmonary function tests preceding surgery can often establish the degree of impairment which these individuals present, and make the surgical team more aware of possible complications.

PSYCHIATRY

It has been frequently stated that mental function is impaired in myotonic dystrophy. Reviews of the reported cases, however, have led authors to reconsider this concept. They have been impressed by the consideration that the reduced intellectual function is actually the result of apathy and patient indifference, as well as social, economic, and environmental factors.³³ However, more recently, hard documentation of cerebral pathology has been forthcoming. Cerebral abnormalities, consisting of cortical heterotopia, and low brain-weights are described by Rosman.³⁴ Barwick notes that 61% of his myotonic-dystrophic patients show significant electroencephalographic abnormalities.³⁵ Refsum describes pneumographic ventricular enlargement in 50% of his patients, which he interprets as evidence for a slowly progressive-cerebral degeneration.³⁶ Therefore, these three specific reports lend credence to the classically stated association of mental dysfunction and myotonic dystrophy.

RADIOLOGY

Abnormalities in skull radiographs of patients with myotonic dystrophy occur in 60-70% of the cases. The sella turcica is significantly smaller, and the vault of the skull is thicker than normal.³⁷ Other authors have found significant increases in air sinuses, with pneumatization of the dorsal sella, and prognathism.¹ These changes are all more prominent in the presence of hypogonadism.³⁸ The long bones and pelvic bones are not affected in this group, as is frequently observed in the other hereditary familial dystrophies.³⁷

CONCLUSION

As can readily be seen, all fields of medicine can become intimately involved in the systemic manifestations of myotonic-muscular dystrophy. Perhaps with a little incentive to consider these possibilities, the referrals to neurology departments will no longer be accompanied by a diagnosis of "a muscle weakness problem," but with the more astute diagnosis of "possible myotonic dystrophy associated with the following systemic involvements:_____."

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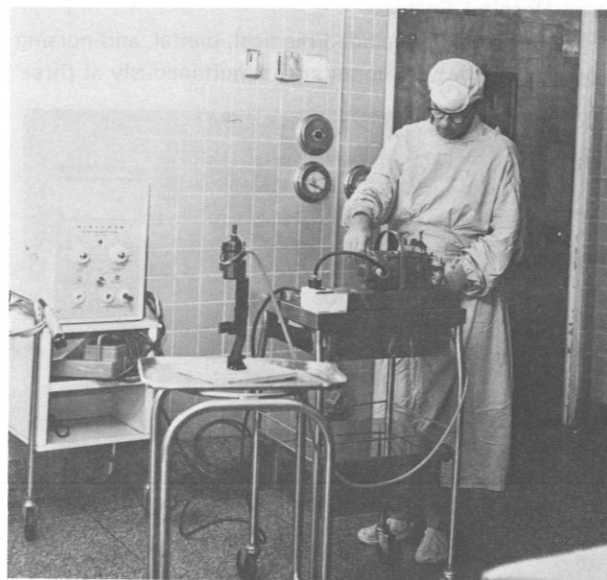
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BACTERIOLOGICAL AIR SAMPLER

The Environmental Health Service, U.S. Naval Regional Medical Center, Guam, recently developed its own air sampler after finding that available commercial samplers were costly, designed for specialized applications, and lacking in versatility required for hospital and industrial use. It was considered that the new unit should offer portability, parts availability, and adaptability for use in both medical and industrial settings.

A Gomco suction pump served as the vacuum source, and a standard Millipore filter (commonly used in water testing) was used to filter the air. The bracket and filter holder came from a "KIT, FIELD, SAMPLING, B.W.," once included in the outfitting list of most organizations as part of the ABC Warfare Program. Measurement of the airflow revealed that a sampling time of 15 minutes was required to sample the 5 cu. ft. of air normally sampled and quoted in most standards. Upon removal from the sampler, the filter is incubated using nutrient broth in the usual way.

In the photo at right, HMC Murren at the U.S. Naval Hospital, Guam, is seen preparing the air sampler for



use. The length of connecting tubing can be varied, permitting location of the suction machine outside the room being tested.

NAVAL HOSPITAL BOSTON



A Forward Look in Medicine

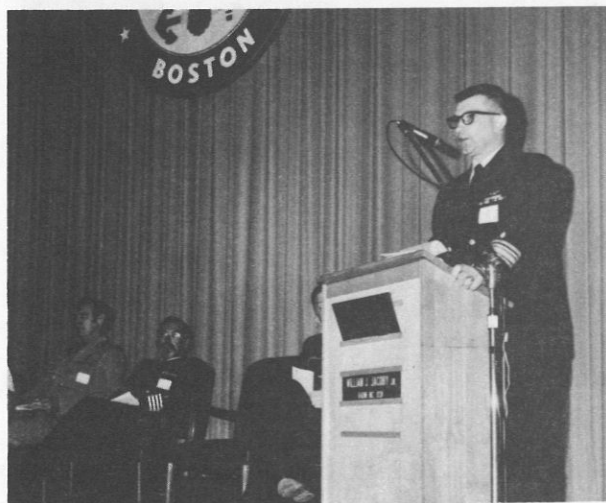
The Fourth Annual Spring Symposium conducted at Naval Hospital Boston, Chelsea, Mass., provided a full program on 16-18 May 1973 under the general theme, "A Forward Look in Medicine."

Co-Chairmen of the symposium were: CAPT James M. Young, MC, USN, Chief of Medicine; and CDR Walter L. McLean, MC, USN, Chief of Pediatrics, at Naval Hospital Boston.

The Symposium included medical, dental, and nursing programs which were conducted simultaneously at three

different locations within the hospital complex. Over 550 individuals were registered to attend, and 90 papers were presented by distinguished representatives of all fields of medicine. There were 33 commercial exhibits which contributed to the success and scope of the "forward look."

The Symposium was opened with a hearty welcome to the attendees, extended by the Commanding Officer at Nav Hosp Boston, CAPT Scott G. Kramer, MC, USN. RADM William J. Jacoby, Jr., MC, USN, Chairman,



OPENING REMARKS.—RADM W.J. Jacoby, Jr., MC, USN led off, following a welcome address delivered by CAPT S.G. Kramer, MC, USN, CO Nav Hosp Boston.



GENERAL SURGERY.—One of the moderators in this section was CDR F.W. Ackroyd, MC, USNR, Chief of Surgery at Mt. Auburn Hospital in Cambridge, Mass., and Associate Professor of Surgery at Harvard Medical School.



NURSING TODAY AND TOMORROW.—Changing patterns of nursing and legislative practices were addressed by Ms. Mary MacDonald, R.N., M.S., Director of Nursing Service, Massachusetts General Hospital, Boston.

Health Care Planning, CAPT Roger I. Alspach, MC, USN.
Nursing Program: LT Carol Ferko, NC, USNR; ENS Thomas Conlin, NC, USNR; LTJG Margaret Robins, NC, USNR; LTJG Susan Miller, NC, USNR; and LTJG Julianne Peters, NC, USNR.
General Surgery, Stanley Mikal, M.D.
Hematology, Charles Emerson, M.D.
Pediatrics, John P. Connelly, M.D.
Clinical Physiology, Lawrence H. Cohen, M.D.
Head and Neck Surgery, William W. Montgomery, M.D.
Gastrointestinal Surgery, Cornelius E. Sedgwick, M.D.
Hematology, Lewis R. Weintraub, M.D.



ASEPSIS.—Ms. Barbara Clarke of Bingham Associates, Boston, shared thoughts and recent findings in nursing aspects of this topic.



EXTENDED ROLE OF THE RESPIRATORY NURSE.—Ms. Marion Reichle of the Beth Israel Hospital, Boston ably defined the role.

Internal Medical Services, National Naval Medical Center, Bethesda, Md., delivered the opening remarks for the assembly.

Due to the highly successful efforts of the Co-Chairmen and various committees, well-rounded programs were offered in the following sessions, implemented by the respective moderators:

Thoracic Surgery, Dwight E. Harkin, M.D., moderator.

Oncology, Peter Mozden, M.D., moderator.

Infectious Disease, Richard Meade, M.D., moderator.

Nephrology, Jerome P. Kassirer, M.D., moderator.

Orthopedics, William D. Shea, M.D., moderator.

Neuropsychiatry, Donald J. Fern, M.D., moderator.



IN THE CARE OF THE DYING PATIENT.—LCDR J.L. Przybylski, MC, USN (left) of Naval Hospital Boston is shown with some of the other participants in the section on care of terminal patients — LCDR B.I. Billings, CHC, USNR (center), and LTJG C. Dresser, NC, USNR.



ABLE MODERATOR.—LTJG Julianne Peters, NC, USNR contributed much.



LEGAL OFFICER.—LT J.F. Dunlap, JAGC, USN addressed "The Nurse and The Law."

General Surgery, RADM Allan D. Callow, MC, USNR-R; and CDR Frederick W. Ackroyd, MC, USNR.

Dental Program, CDR Herbert O. Scharpf, DC, USN; and CDR Matthew R. Cummings, DC, USN.

Exceptional and consistently high attendance at all sessions of the Nursing Program was achieved, with large numbers of civilian and military nurses from the regional area joining the Naval Hospital nursing staff, to participate in an unusual program of relevant topics.

The Naval Hospital Officers' Wives Club graciously attended "Hospitality Tables" during the conference. On the evening of 17 May, approximately 300 guests attended a Consultants' Party, which was held at the Naval Hospital Boston Officers Club. Splendid arrangements for the gathering at the Club were made by CDR and Mrs. John R. Musser, MC, USN.



FETAL MONITORING: NURSING RESPONSIBILITIES.—LTJG M. Phillips, NC, USNR (at podium) described the monitor while LTJG A. Mallen, NC, USNR identified the mechanics involved.



PEDIATRIC NURSE PRACTITIONER.—LT Barbara Robinson, NC, USNR reviewed a year of progress.



NURSING AND THE ALCOHOLIC PATIENT.—LTJG Joan C. Kishel, NC, USNR from Nav Hosp Great Lakes, Ill., addressed nursing management in a specific area.



RESERVE DRILL PARTICIPATION

To the Editor: I would like to correct the impression given by a very misleading statement concerning Reserve Drill Participation in the "NOTES AND ANNOUNCEMENTS" section of the March 1973 issue of *U.S. Navy Medicine*, on page 50, right column, paragraph one. It is stated that: "This arrangement affords certain, selected *Naval Reserve Medical Department officers* an opportunity to perform drills in their specialty" The statement should have addressed *Naval Reserve medical officers*, vice *Medical Department officers*. Such participation is available to medical officers only. If participation were open to all Medical Department officers, the program would have been much more active and acceptable.

After more than 20 years of observation, I believe that one of the large problems faced by "Reserves" is the incredible communication gap which exists between the active-duty Navy and participating Reservists. This type of statement does nothing to lessen that gap.

CDR Ann B. O'Brien, NC, USNR-R,
CO, Naval Reserve Medical Co. 3-4,
St. Albans, N.Y.

The above letter was referred for reply to our able Naval Reserve Editor, CAPT Wendell A. Johnson, MC, USN. In the opinion of the U.S. NAVY MEDICINE staff, CAPT Johnson is actively doing a great deal to diminish the gap between active-duty and Reserve members, as evidenced by faithful and frequent input to this publication, for example.

CAPT Johnson comments: "The statement that the Medical Company contributory-support concept affords 'certain, selected Naval Reserve Medical Department officers an opportunity to perform drills in their specialty,' is an accurate one. Membership is not limited exclusively to physicians as stated in CDR O'Brien's letter.

These units are composed of Medical, Medical Service, and Nurse Corps officers. Appendix F to Enclosure 24 of BUPERS INSTRUCTION 5400.42 series states that Naval Reserve officers with designators 1915, 2105, 2305, 8175, and 8185 are eligible for Medical Company membership."

"While neither CDR O'Brien nor the referenced article mention the subject of pay billets, we are certain that the paucity of these pay assignments is the problem that is being addressed. At the inception of the contributory-support program all members of the units cited in the article were allowed to affiliate in pay status, regardless of their Corps, and so long as the limit of ten pay billets per company was not exceeded. Several of the companies not only have MC officers, but also MSC and NC officers drilling in pay status. However, no new MSC and NC officers are being placed in pay billets, nor have there been any assignments to pay from among these Corps for the past 12-18 months."

CAPT W.A. Johnson, MC, USN
Director, Naval Reserve Division,
BUMED Code 36.

CIGARETTES AND ILL HEALTH

To the Editor: The former Surgeon General of the Public Health Service, Dr. Luther Terry publicly asserted that cigarette smoking represents the largest, single, health problem concerning which it is in our power to do something immediately. The research of Dr. Daniel Horne substantiates that opinion. Dr. George James, Dean, Mt. Sinai School of Medicine, N.Y., comments: "The family that smokes together had better pray together; the single most lethal controllable agent in this country is the cigarette."

Why should naval medical officers wage an active campaign to prevent children and young adults from

acquiring the cigarette habit? Why should we exert every effort to influence habitual smokers to stop or cut down? Let us review the facts:

Over a quarter of a million premature deaths each year result from diseases associated with cigarette smoking.

Eleven million extra chronic diseases arise in the cigarette-smoking population.

One-third of all male deaths between 35-60 years of age are premature deaths from diseases associated with cigarette smoking.

As concluded in the second Surgeon General's Report: Smoking is the "principal" cause of lung cancer, and the most important cause of death and disability resulting from chronic conditions.

Death from lung cancer is increasing almost geometrically (2,500 in 1930; now over 50,000).

Daily, 4,000 children start smoking — over a quarter of a million each year.

A million children now in school will die prematurely with lung cancer if present rates continue.

The 250,000 early deaths each year from diseases associated with cigarette smoking comprise a little less than one-seventh of all the deaths in America annually. At present rates, one-seventh of all Americans now alive (about 28 million), will die prematurely of diseases associated with cigarette smoking.

Every year cigarettes kill more Americans than were killed in World War I, the Korean, and the Vietnam conflicts combined; nearly as many died in battle in World War II. Annually, cigarettes kill five times more Americans than do traffic accidents. Lung cancer, alone kills as many as does the carnage on our roads.

In 1966, 77 million working days were lost in the U.S. that would not have been lost, if cigarette

smokers had the same rate of work loss from illness as do non-cigarette smokers. These 77 million work days constituted one-fifth of all the work days lost because of illness.

Cigarette smoking increases the likelihood of death from coronary disease by about 70%.

In the next 10 years, cancer of the lung may well displace breast and cervical cancer as the greatest cancer-killer of women.

American men who smoke may cancel out most of the additional life span gained by the last half-century of almost miraculous medical advance.

The late Senator Robert Kennedy read the following statement into the Congressional Record on 18 May 1967: "One physician told me recently that if he had his choice as to the matter of health policy between immediately having enough doctors, nurses, and hospital beds to remedy our serious national shortage in these areas, and getting every American who smokes cigarettes to stop, he would choose the latter. Far more lives, he told me, would be saved by getting the 48 million Americans who now smoke cigarettes to stop, than would be saved by solving all of our health manpower and facility shortages."

Cigarette smoking is hazardous to health, extremely hazardous! It is now clear that cigarette smoking is hazardous to the health of all present at the smoking. Cigarettes should be sold only on prescription, to be used only by consenting adults in private.

RADM Robert E. Switzer, MC, USNR,
Director, Children's Division,
The Menninger Clinic,
Topeka, Kansas. ☘

NAVY BIRTHDAY — A FAMILY TRADITION

Inasmuch as 13 Oct falls on a Saturday this year, it is appropriate to begin the official internal commemoration on Friday, 12 Oct as the start of a Navy Birthday weekend. The weekend of 12-14 Oct is designated Navy Sabbath weekend. The Navy League of the U.S. will celebrate its traditional Navy Day celebration on 13 Oct. Festivities marking the period 8-14 Oct as Navy Week are also appropriate. Happy 198th Navy Birthday! ☘



WEIGHT-CONTROL PROGRAM

In a recent memorandum to all unit commanders, commanding officers, and officers-in-charge, the Chief of Naval Personnel expressed his personal concern over the problem of obesity in the Navy.

The Surgeon General fully supports Vice Admiral Bagley's view that we must strive for a Navy of trim and fit personnel who can withstand physical rigors, as well as exhibit the very finest personal appearance and pride in uniform. Although ultimate responsibility for weight control rests with the line commanders, VADM Custis has indicated that the Medical Department will cooperate to the fullest extent in supporting the command weight-control program. In this regard, medical officers must be aware of the high-level concern and their responsibilities, as set forth in Article 15-51, Manual of the Medical Department. A joint BUPERS/BUMED instruction which will provide additional guidance on weight control will soon be issued, and should be made available to all medical officers when received.

We of the Medical Department must not overlook our own bulging waistlines. An effective weight-control program for staff medical department personnel must be followed and enforced.—Code 1, BUMED. 🍷

NAVAL RESERVE MOBILIZATION BILLETS

No area of Naval Reserve Medical Program administration is so often discussed or as widely misunderstood as the subject of mobilization billets.

The Commanding Officer, Naval Reserve Manpower Center is responsible for assigning qualified inactive-duty personnel to mobilization billets designated by the Chief of Naval Personnel, using certain, predetermined criteria.

Prior to 1970, personnel were "assigned" or "detailed" to mobilization billets. The assignment process was predicated upon the assumption that neither billet requirements nor manpower resources changed appreciably during a given twelve-month period; this process was geared to full mobilization, with few, limiting criteria.

In 1970 the words "assignment" and "preselection" were used interchangeably, with "preselection" becoming the preferred term by 1971. Although the reservist may be aware of his preselection via the Unit Mobilization Personnel-Assignment Report (UMPAR) or the microfilmed Inactive-Duty Reservist Locator, neither of these documents constitutes a directive to report. Mobilization detailing and consequent order-writing cannot be implemented, until criteria based on existing legislation and current Department-of-Defense directives are received from the Chief of Naval Personnel. Therefore, an inactive reservist does not receive orders to a specific mobilization billet as a result of preselection.

In view of the foregoing, maximum-response flexibility, within the limitations of automated-data processing (ADP), must be maintained to ensure an effective and efficient mobilization. This response, based upon past experience, is estimated to consist of 20,000 sets of orders within 50 hours. To this end, all billet requirement and personnel information necessary to effect mobilization, as well as the identity of all preselections, are maintained in ADP files. These files meet two objectives inherent in the mission of NRMC:

a) They provide the continuously updated source of management information necessary to gauge Naval Reserve mobilization-response capabilities.

b) They facilitate order-writing in the event of a general mobilization with few, limiting, recall criteria.

A partial mobilization with highly defined recall criteria, may, or may not negate a great percentage of the current preselections. The severity of this situation is dependent largely upon the definition of those personnel eligible for recall; it will certainly be affected by the needs of Navy, as defined by CNO *at that time*. (A partial mobilization affecting only those billets related to Atlantic Antisubmarine Warfare [ASW] operations should cause few problems, except in the identification of certain support billets; however, should recall exempt specific groups of local, state and federal employees, plus all those who served a minimum of 12 months in Vietnam, or who had less than six months of obligated service remaining, the number of personnel who would be eligible and already preselected would be sharply reduced.)

With the greater probability of selected recall based on a partial- or domestic-crisis mobilization, it is doubtful that the assignment criteria used at the time of mobilization could (or should) be as restrictive as those criteria used in preselection; however, the careful and judicious application of restricted criteria will ensure the availability of a highly qualified core of reservists, best able to meet the objectives.

In preselecting reserve personnel for assignment to mobilization requirements, personnel factors are considered in the following order of priority:

NAVAL RESERVE PROGRAM
DRILL PAY STATUS (PAY/NON-PAY)
DESIGNATOR/RATING
NOBC/NEC
RANK/PAY GRADE
TYCOM
GEOGRAPHIC LOCATION

Naval Reserve Program.

All mobilization billets have been systematically grouped and identified with specific Naval Reserve programs. These groups of billets have been assigned Naval Reserve Program-Category Codes (NRPCCs). In general, the identification of a Naval Reserve program and its mission, with its NRPCC, precludes preselection of individuals in that program to vacant billets in a NRPCC representing a different program with another associated mission. Reservists affiliated with generalized Naval Reserve programs, e.g., Naval Reserve Officers School (NROS), Reserve Support and Naval Reserve Group Command which have no specific mobilization mission, are treated as "pool" personnel and may be preselected for a mobilization billet (other than combat), provided their qualifications are consistent with the requirement.

Drill Status.

Drill-pay reservists (Selected Reserve personnel) are initially screened for preselection to Mobilization Day Increment (MDI) billets on a pay grade for pay-grade basis. After MDI screening, Selected Reservists will be similarly screened for preselection to active activity M+1 billets (or M+1 [A] billets). Drill-pay personnel will not be preselected for billets other than MDI and M+1 (A). Ready-Reserve personnel drilling in a non-pay status shall have next priority in filling the remaining MDI and M+1 (A) billets, or they may be preselected to another billet up to M+3 months.

NOBC.

Navy Officer Billet Classifications (NOBCs) are qualitative-classification codes assigned to officer billets, and to individual officers, based on occupational qualifications. An officer's most significant NOBC, or designated-related NOBC is matched with the primary-billet NOBC whenever possible. For this reason it is imperative that officers report in detail their civilian occupations and education, so that these skills may be coded by the analysts at the Naval Reserve Manpower Center (NRMC) and added to the ADP files. Because NRMC is not authorized to encode skills earned through reserve participation, officers are encouraged to request certification of other than civilian-earned skills from their Reserve Program Sponsor. A copy of this certification is sent to NRMC, and the skills then encoded. The NOBC is the best tool available to NRMC to ensure that an officer's skills are properly utilized in preselection to a mobilization billet.

Development of realistic mobilization requirements, and utilization of skills of the reserve-personnel resource are mutually exclusive areas:

A) The revision, updating and justification of mobilization requirements is currently being attacked on all levels. Mobilization requirements are a responsibility of the Active Navy. The development of Ship and Shore Manning Documents will assist in providing consistency within Command-types. Inattention to mobilization requirements on the activity level has created many problems in preselection of reserve personnel. For example, 400 mobilization billets at various medical activities were written incorrectly; the billet designator, NOBC, and billet title did not agree by definition. (A 2100-designator requirement has a NOBC of 0070 [General Practitioner], with a billet title of "psychiatrist." A billet for a 2300 designator, with a NOBC of 0700 is entitled "optometrist." The correct NOBC for optometrist is 0857.) The numbers and types of mobilization requirements are based on the availability of certain skills within the reserve-personnel resource.

B) Problems encountered in matching personnel to mobilization requirements reveal imbalances.

(1) There are instances when Medical Corps officers are made available for a mobilization billet, and all existing billets requiring their most recently acquired NOBCs are filled. An attempt is then made to match an earlier acquired skill.

(2) When this approach is exhausted, nonspecialty billets must be filled. Since nonspecialty billets far outnumber the specialized billets, a realistic flexibility must be utilized to insure that nonspecialty billets are filled, rather than leaving an officer unassigned. The resulting "mismatches" are few.—Code 36, BUMED.

DAHLGREN SYMPOSIUM ON MICROWAVE RADIATION

In recent years a great deal of controversy regarding the hazards of nonionizing radiation has arisen. The radiation spectrum involved includes all types of electromagnetic radiations such as static electrical discharges, microwaves (radio and television, communications bands, and radar), infrared (heat), and visible light. These radiations do not carry enough energy to break apart molecules and, hence, are nonionizing. To date, no adverse effects have been conclusively demonstrated to result from exposure to any of these radiations at presently allowed levels. However, because of the renewed interest in this area, the Navy and Bureau of Medicine and Surgery have elected to reevaluate the problem.

In August of last year, a Medical Research Team was established at the Naval Weapons Laboratory (NWL) in Dahlgren, Va., detached from the Naval Unit, Fort Detrick, Md. The team is studying the possible biologic effects of nonionizing radiation generated by the equipment in use at NWL, as well as identifying specific avenues of research in the field. Members of the team also act as safety consultants to the command.

To formally announce the beginning of the research effort, a symposium on the "Biomedical Aspects of Microwave Radiation" was held at Dahlgren on 10 Jul 1973. Among the invited guest speakers were: CDR Paul Tyler, MC, USN of the Bureau of Medicine and Surgery; Dr. Sol Michaelson of the University of Rochester; Dr. H.P. Schwann of the University of Pennsylvania; Dr. D.E. Beischer of the Naval Aerospace Medical Research Laboratory; Dr. S.J. Baum of the Armed Forces Radiobiological Research Institute; and Dr. M.F. Rose of NWL.

Following the morning presentations and luncheon, the 140 guests heard RADM Philip O. Geib, MC, USN, Assistant Chief of the Bureau of Medicine and Surgery

for Research and Military Medical Specialties dedicate the new Biomedical Laboratory. He then officially cut the ribbon to climax the day's events. LCDR William C. Milroy, MC, USN, host and officer-in-charge of the Medical Research Team, subsequently invited the guests to tour the laboratory facilities.

The symposium permitted an exchange of the information which is currently available, and got the effort off to a well-directed start. The information exchange will prove invaluable in guiding this research.

Many various departments and research laboratories, not only at Dahlgren but all over the country, have expressed concern with, and interest in radiation and microwave hazards. The Medical Research Team has made itself available to help answer any questions relating to the field of biomedical research.—HM3 Mack H. Conway, III, USN; Medical Research Team, Code ESM; Naval Weapons Laboratory, Dahlgren, Va.

ENVIRONMENTAL HEALTH WORKSHOP

The Navy Industrial Environmental Health Center will conduct a Workshop in Environmental Health at the Canterbury Hotel in San Francisco, on 12-16 Nov 1973.

The program is directed toward Federal Occupational Medicine and should be of interest to physicians, nurses, safety officers, industrial hygienists, and managers.

Attendance is open to all interested persons. Naval Reserve and AAFP accreditation have been requested.

For further information, contact Dr. W.A. Redman, Jr., 3333 Vine Street, Cincinnati, Ohio 45220. Telephone (513) 684-3947.

VECTOR-CONTROL SPECIALIST RECERTIFICATION COURSE

A one-week course for Vector Control Specialist Recertification is scheduled for 5-9 Nov 1973, at the Disease Vector Ecology and Control Center, NAS, Jacksonville, Fla. The course is open to Medical Department personnel of the Navy and Coast Guard who have completed PMT school, or who have been previously certified in vector or pest control by either DVECC, Alameda, Calif., or Jacksonville, Fla.

The objective of the course is to review pest biology and control, and to discuss recent pest-control procedures. Satisfactory completion of the course will result in Recertification as a Vector Control Specialist.

Further information and quotas can be obtained from the Center: Navy Disease Vector Ecology and Control Center, Box 43, Naval Air Station, Jacksonville, Fla., 32212. AUTOVON: 942-2425, 904-772-2424.

STREAMLINED PHARMACY SERVICES

The pharmacy at Naval Hospital Portsmouth, Va., has significantly reduced waiting time during peak periods of activity. An average of 1300 to 1500 prescriptions are filled there each day; on some days the figure exceeds 2,000. Through an extensive renovation project, stocking, storage and staffing procedures have been revised.

Routine prescriptions are handed to a clerk at the check-in window who screens the orders, and passes them along to the first available pharmacists or pharmacy technicians working along a conveyor-belt line. Pharmacists/technicians provide the indicated medications individually, placing each medication with the accompanying prescription on the belt. At the end of the line a clerk types the label, attaches it appropriately to the container, and hands the medication to the patient. Patients are seated in the ample waiting room during this process, and are seldom detained more than 15 minutes during busy operating hours.

Bottleneck No. 1 used to occur at the check-in window, where long lines sometimes formed during busy periods. By opening a second window during rush hours, this delay has been obviated.

Bottleneck No. 2 used to result when the volume of prescriptions overwhelmed the available pharmacists, technicians, and clerks who were manning the line. Arrangements have now been made to pull personnel from other areas where schedules are flexible, thereby augmenting the working staff in the Outpatient Dispensing Department. To preclude overcrowding of the



DURING BUSY PERIODS.—Pharmacists/technicians work on both sides of the conveyor-belt line at the pharmacy in Naval Hospital, Portsmouth, Va.



ACCESSIBLE STORAGE.—A back-up supply of medications is maintained just a few steps away from the conveyor-belt line. Note plastic boxes on shelves in the foreground; these contain quantities of prepackaged fast-moving items.



PHARMACIST ON THE LINE.—Easy access to fast-moving and moderate-moving items is planned. Fast-moving medications are kept above the conveyor-belt line, while moderate-moving items are located behind the pharmacist. On the opposite side of the line, a mirror-image arrangement of the stock on shelves is provided.

augmented staff, a second counter was provided with appropriate aisle space and shelving along the line, and a mirror-image arrangement of stock on both sides.

To reduce the number of steps which a pharmacist/technician must take to reach medications, and speed up the process, pharmaceutical products were divided into three categories: fast moving, moderate moving (issued several times daily), and slow moving. Fast-moving items are now stored above and below the line, with an additional supply maintained just a few steps away. Moderate-moving items are placed immediately

behind the pharmacists/technicians, and slow-moving items are kept one aisle away.

The pharmacy at the Joel T. Boone Clinic Branch Dispensary, which opened up last year at the Little Creek Naval Amphibious Base in Virginia, served as a prototype for the renovation project at the Naval Hospital in Portsmouth, Va. Modern-design concepts incorporated in the Boone Clinic pharmacy have proven highly successful.

Prepackaging, particularly for fast-moving items, has been helpful. A further refinement consists of storing quantities of each prepackaged medication in individual plastic boxes. When the on-line supply is depleted, the pharmacist/technician simply replaces one plastic box with another from the back-up supply.

Other appreciated additions include: placement of a refrigerator along the line; construction of office space for the stock-control clerk; and installation of a three-speed motor on the conveyor belt, an alarm system on the pharmacy door, and neoprene-padded matting on the walk areas. ☸

UNDERWATER MEDICINE EXCHANGE PROGRAM

Surgeon Commander John Murray Young of the Royal Navy has recently reported to the Naval Medical Research Institute in Bethesda, Md., for duty as Exchange Officer in Underwater Medicine. He succeeded Surgeon Commander David H. Elliott, R.N.

Dr. Young qualified in medicine at St. Mary's Hospital in London, and has a Ph.D. degree in respiratory

physiology from Oxford University. He is also an aviator, having received naval flight training from the Royal Air Force. Dr. Young comes to Bethesda from the Institute of Naval Medicine in Alverstoke, in the south of England, the postgraduate education and research center for the Royal Navy Medical Service.

The U.S. Navy counterpart in this exchange is CDR James Vorosmarti, MC, USN, who has been at the Institute of Naval Medicine in Gosport, England since the fall of last year. Dr. Vorosmarti has been seconded as Senior Medical Officer (Underwater) at the Royal Navy Physiological Laboratory, and for the Deep-Trials Unit in Alverstoke where he is responsible for the saturation-diving-development trials of the Royal Navy. ☸

PENSACOLA CANCER PROGRAM APPROVED

The Commanding Officer at Naval Hospital Pensacola, Fla., CAPT Neil V. White, MC, USN has been officially advised that the Naval Hospital's Cancer Activities Program has received three-year approval of the American College of Surgeons, the national examining group.



COUNTERPARTS MEET IN ALVERSTOKE, ENGLAND.—CDR James Vorosmarti, MC, USN (left), and Surgeon Commander James Murray Young of the Royal Navy converse in front of the control panel for the diving chambers of the Royal Navy's Deep-Trials Unit.



SATISFACTION IN ACHIEVEMENT.—CAPT Maughon, MC, USN (left); Mrs. Vida Jensen (center); and CAPT N.V. White, MC, USN (right) share pleasure in learning of official 3-year approval of Nav Hosp Pensacola Cancer Activities Program by the American College of Surgeons. (Courtesy of PAO, Naval Aerospace Medical Center, Pensacola, Fla.)

CAPT White lauded the efforts of CAPT James S. Maughon, MC, USN, Executive Officer and Chief of Surgery at the Naval Hospital, who has worked toward such hospital accreditation over the past three years. The coveted stamp of approval by the American College of Surgeons is not easily earned; only a few hospitals, military or civilian have been so designated in northern Florida.

Under the professional guidance of CAPT Maughon, Director of the Cancer Program, the Hospital's Tumor Board Registry has become viable and serves to upgrade the care of cancer patients; the service also provides the opportunity for valid research, and for continuing medical education of Navy physicians.

The Naval Hospital Tumor Board secretary, Mrs. Vida Jensen maintains voluminous records, and monitors patient follow-up evaluations. Mrs. Jensen was highly praised by CAPT Maughon for her dedication and valued assistance in gaining professional recognition for the Cancer Activities Program of the Naval Hospital. 🇺🇸

GAIN FOR CUTLER DENTAL TRAILER

The Naval Radio Station (T) Cutler recently enjoyed a major improvement in the Station dental facility, with the installation of two modern dental chairs and ancillary equipment.

The slightly used equipment had previously been installed in the Navy's Fargo Building in Boston. When the Shore Establishment Realignment necessitated the closing of the Fargo Building's dental clinic, the District Dental Officer, CAPT William H. McNitt, DC, USN seized the opportunity to substantially improve the dental facilities at one of the most isolated activities within the FIRST Naval District.

Arrangements for installing the elaborate equipment were made with LCDR James A. Maddox, DC, USN, the Dental Officer for Naval Security Group Activity in Winter Harbor, Me., who provides dental services to Cutler. Dental Repairman Bert D. Cook, an employee of the Boston Naval Shipyard, removed the equipment which was transported by Seabees assigned to the Cutler Naval Radio Station. Both LCDR Maddox and Mr. Cook performed the reinstallation, and the entire relocation was accomplished in five working days. The Cutler Station realized a significant upgrading in dental equipment at an absolute minimum cost.

The modern equipment will enable LCDR Maddox to work more efficiently. All the personnel assigned to the remote Cutler Station, plus their dependents will benefit from the improved facilities. As part of a

helicopter tour of District dental facilities, CAPT McNitt was on hand to cut the ribbon, marking the reopening of the Station dental trailer on 27 Jul 1973.



DENTAL FACILITY REOPENS.—First Naval District Dental Officer CAPT William H. McNitt, DC, USN (left), cuts the ribbon reopening the dental trailer at the Naval Radio Station (T) Cutler, after the installation of two new chairs and ancillary equipment. LCDR James A. Maddox, DC, USN (center), Dental Officer; and the Cutler Radio Station's Commanding Officer, CDR Charles W. Jaus, USN (right) assist. 🇺🇸

ROOM PLAQUES HONOR POWs

Twelve rooms at the Naval Hospital Portsmouth, Va., now bear the names of former Prisoners of War who occupied them earlier this year.

The hospital dedicated the rooms as a perpetual tribute to the 12 distinguished Navy men who were treated there following their release from captivity. Those accorded this honor are: RADM Jeremiah A. Denton, Jr.; CAPT James A. Mulligan, Jr.; CAPT Allen C. Brady; CDR John H. Fellowes; CDR Eugene B. McDaniel; CDR Edwin A. Shuman, III; CDR Kenneth L. Coskey; LCDR Paul E. Galanti; LCDR William M. Tschudy; LCDR Michael D. Christian; LCDR Robert S. Fant, Jr.; and LT Robert I. Randall.

The door to each room bears a plaque honoring the former occupant. The entrance to Bedroom No. 6 of the hospital's 12th floor, for example, proclaims it to be:

THE "DENTON" ROOM
IN HONOR OF
RADM JEREMIAH A. DENTON, JR., USN
FORMER VIETNAM POW

The other eleven plaques are similarly inscribed.

A second plaque adorns the entrance to the "Denton" Room. It is a quotation taken from the now-

famous speech that Admiral Denton uttered at Clark Air Base on 12 Feb 1973, as he stepped off the first plane from Hanoi: "We are happy to have the opportunity to serve our country under difficult circumstances. We are profoundly grateful to our Commander-in-Chief, and to our Nation for this day. God Bless America."

Several former Prisoners of War, together with family members, recently assisted RADM Willard P. Arentzen, MC, USN, the hospital's Commanding Officer, in dedication ceremonies. As the group approached each room, a general reaction of surprise, mingled with pleasure at the gesture was observed.

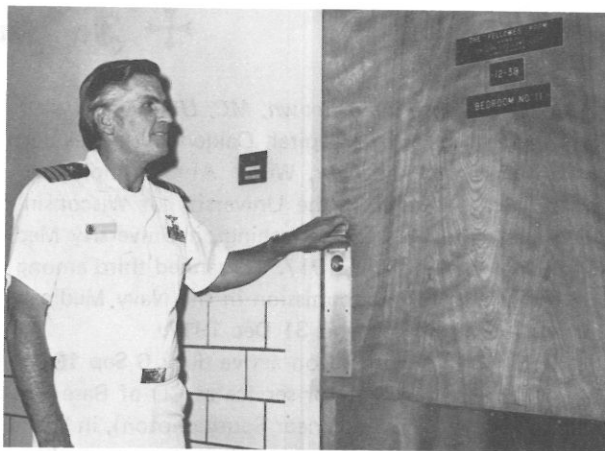
For the Portsmouth Naval Hospital, dedication of these rooms reflected the spirit of admiration and appreciation due all former Prisoners of War, with expression of particular affection for the 12 officers it was privileged to serve directly.



A WARM TRIBUTE.—RADM Jeremiah A. Denton, Jr. (right); Mrs. Denton; and RADM Willard P. Arentzen, CO, Nav Hosp Portsmouth, Va., view the commemorative plaque on the door of THE "DENTON" ROOM.



THE BRADY ROOM.—RADM Willard P. Arentzen (right), CAPT Allen C. Brady (left), and Mrs. Brady view the plaque identifying CAPT Brady's former hospital room.



THE FELLOWES ROOM.—CDR John H. Fellowes is pleased by the gesture.



THE CHRISTIAN ROOM.—LCDR Michael D. Christian, his wife Charlotte, and their three daughters admire the commemorative plaque.



THE MULLIGAN ROOM.—RADM Willard P. Arentzen (left); CAPT James A. Mulligan, Jr. (right); and Mrs. Mulligan note the plaque which identifies CAPT Mulligan's former hospital room.

✠ In Memoriam ✠

VADM Clarence John Brown, MC, USN (Ret.) died 28 Aug 1973 at Naval Hospital, Oakland. He was born 15 Jan 1895 in Plum City, Wisc. After completing undergraduate studies at the University of Wisconsin (1915), he graduated from Washington University Medical School (St. Louis) in 1917. He ranked third among 362 candidates for a commission in the Navy Medical Corps between 30 Jun and 31 Dec 1917.

Admiral Brown entered on active duty 6 Sep 1917. He won the Bronze Star for service as CO of Base Hospital 12, Netley, England (near Southampton), in World War II. In addition to several other commands, he served as Assistant Chief of the Bureau for Research and Military Medical Specialties; as Inspector General, Medical; and as Deputy Chief of the Bureau (1951-54). He was a Fellow of the American College of Surgeons, a Diplomate of the American Board of Otolaryngology, and a member of the American Academy of Ophthalmology and Otolaryngology.

A Rear Admiral with date of rank as 15 Jul 1942, Dr. Brown had retired as a Vice Admiral on 1 May 1954.

CAPT William F.E. Loftin, MC, USN (Ret.) died 1 Sep 1973. He was born in Mount Olive, N.C., on 25 Jun 1902. After earning his B.A. degree at Duke University, Durham, N.C., in 1922, CAPT Loftin subsequently attended the University of North Carolina from 1922 to 1924, and received his M.D. degree at the University of Maryland in 1926.

CAPT Loftin's major naval assignments included the following: Nav Hosp, Canacao, Cavite, P.I., 1930; Destroyer Division No. 38, and No. 13, Division Medical Officer, 1931; USS *Jason*, 1931-1932; Destroyer Division No. 30, Division Medical Officer, 1935-1937;

USS *Neosho*, 1939-1941; USS *Salt Lake City*, Senior Medical Officer, 1942-1944; Nav Hosp, San Leandro, Calif., Executive Officer, 1944-1946; Bureau of Medicine and Surgery, Wash., D.C., Head, Medicine Branch of Professional Division, 1946; Nav Hosp Quantico, Va., Executive Officer, 1951. On 20 Jul 1943, Dr. Loftin was promoted to the rank of Captain.

In Oct 1951 CAPT Loftin was transferred to the Nav Hosp Bethesda, for treatment; his name was placed on the TDRL List on 1 Jun 1952, and on the Permanent Retired List 1 Dec 1955.

CAPT Loftin was awarded the Navy Unit Commendation, and a Commendation from Commander Battleships and Cruisers, U.S. Pacific Fleet. He also held the following medals: American Defense Service Medal, American Area, Asiatic-Pacific Area, World War II Victory Medal with four stars, and the Yangtze Campaign Medal.

CAPT Marcy Shupp, MC, USN (Ret.) died 27 Aug 1973 at his home in the San Francisco Bay Area. He was born 20 Dec 1902, in Wyoming County, Pa. He graduated from the University of Kansas Medical School in the Class of 1931; he reported for active duty in the Navy Medical Corps on 29 Jun 1931.

Dr. Shupp spent most of his 30 years in the Navy in clinical medicine; included among his duty stations were staff assignments at the Naval Hospitals Oakland and Mare Island; and at the Army Hospital (Tripler), Hawaii, where he was Chief of Neuropsychiatry. During the last five years of his naval career he served in an administrative capacity: first, as Executive Officer at Naval Hospital, Jacksonville; and finally, as a member of the Physical Evaluation Board, Washington, D.C. He retired from active duty 1 Jun 1961. ☙

ERRATUM

Attention is invited to the professional paper which appeared in "The Hematologists' Corner" in August 1973. The article by LCDR M.A. Habib, MC, USN and CAPT R.A. Burningham, MC, USN was entitled: "Thalassemia Syndromes — Selected Aspects." (U.S. NAV MED 62:33-37, Aug 1973.) On page 35, under the subtitle "Pathophysiology," line 10, the sentence should have read: "In β thalassemia, for example, an excess of alpha chains is present."

Those who retain the publication are asked to insert this correction. We regret any inconvenience caused by this error. ☙

UNITED STATES NAVY MEDICINE

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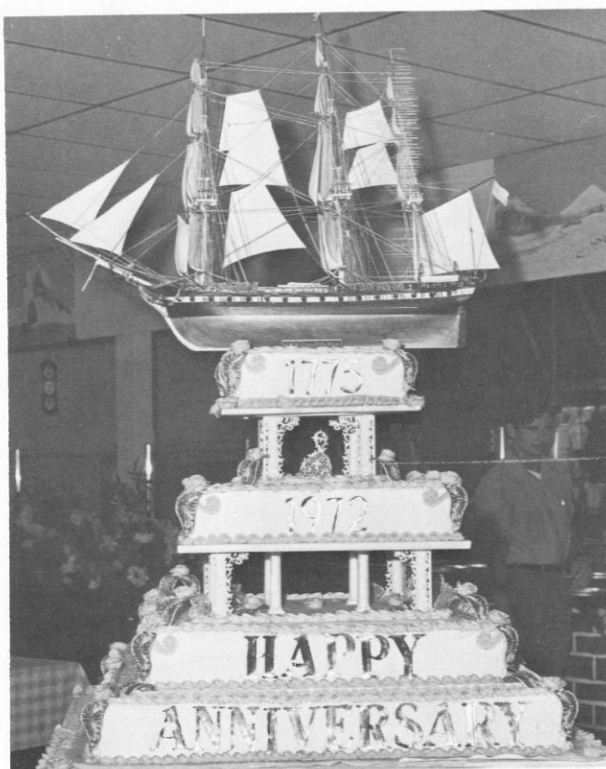
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FIRST 13 OCT OBSERVANCE OF NAVY BIRTHDAY.—
For the first time, in 1972 a concerted effort was made to promote the observance of 13 Oct as the official Navy Birthday. On 13 Oct 1775, the Continental Congress authorized the acquisition and construction of ships for the Continental Navy. As the above photo by HM1 M.R. Villaroman, Jr., USN proves, the Naval Hospital Camp Pendleton, Calif., left no stone unturned. The four-tiered Navy Day cake was prepared by the Nav Hosp Food Service Dept.

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